The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXIV, No. 14 CHICAGO, ILLINOIS APRIL 3, 1915

THE CEREBROSPINAL FLUID IN HEALTH AND DISEASE*

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The theme of my address is one of entrancing interest to the thoughtful observer, whether from the purely physiologic or the purely clinical point of view. Probably no system of human anatomy, physiology or pathology has been the object of a more intensive study than the cerebrospinal system, from the contributions of the earlier writers to the present day. And yet, with all our knowledge of the anatomy of the brain and spinal cord in their normal state, and of the pathologic processes to which they are subject, how extraordinary it is that of the fluid in which these tissues are forever bathed, so little is known. We are not always, however, to remain in the dark. Hidden truths will soon be revealed, and the year or two just past has been extraordinarily productive. From the many contributions that have appeared in recent times, from the laboratory and clinics of various countries, new light has been shed on some of the mysteries of this ambient fluid. This subject, therefore, is a timely one, of interest alike to the surgeon and to the neurologist, and the hour may be spent profitably in taking stock, as it were, of our knowledge of the cerebrospinal fluid, in the light of modern interpretation.

What is the origin of the cerebrospinal fluid? The original conception of the cerebrospinal fluid as a transudate, has long since been discarded. When Pettit and Girard, in 1902, published their monograph on the secretory function and morphology of the choroid plexus, based on a study of the structure of the plexus in different classes of vertebrates, and on the histologic changes in the gland following the administration of substances with a hypersecretory effect, there seemed little room for doubting that the cerebrospinal fluid was a secretory output. Mott[1] added his testimony to the hypothesis after a comparison of the lachrymal gland and the choroid plexus. Between the two he saw a strong similarity, and on the basis of his own histologic studies and evidence from other sources, he postulated that the choroid plexus *was* a gland with an *external* secretion.

As still further proof of the secretory theory, stands the intravitam staining experiments of Goldmann,[2] who, in his study of the fetal nervous system, found that intracellular glycogen was demonstrable only in the plexus cells. This substance was not held back by the cells, but secreted drop by drop and diffused with cerebrospinal fluid throughout the entire nervous system. Thus the cerebrospinal fluid is charged with important metabolic products, the destination and function of which we must consider later.

The impermeability of the choroid plexus, as shown by Goldmann[2] may be offered as further evidence in favor of the secretory theory. When foreign toxic substances were injected into the circulation, the choroid plexus acted as an impermeable filter and prevented their entrance into the cerebrospinal fluid; on the other hand, when the dye was injected into the subarachnoid space, the brain and cord were at once stained. Have we not in this phenomenon a side light on salvarsan therapy? It is a well-known fact that after salvarsan is injected intravenously, only an infinitesimal amount of arsenic, if any, can be recovered from the cerebrospinal fluid. Is this not to be attributed, in part at least, to the character of the choroid plexus? Thus it would seem more rational to inject salvarsan or salvarsanized serum directly into the ventricles or subarachnoid space in cerebrospinal lues. It has been proved[3] conclusively, that there is no lack of affinity between the brain substance and arsenic, but it is possible, as suggested by McIntosh,[3] that the walls of the cerebral capillaries may be so constructed that they will not permit the passage of arsenic as do the capillary walls in other parts of the body. However this may be—whether the failure of the salvarsan to reach the brain cells is due to the non-permeability of the plexus, to the refusal of the plexus cells to secrete arsenic, to a peculiarity of the cerebral capillary walls, or to a combination of the three causes—the difficulty may be surmounted by an intraventricular or subarachnoid injection of the salvarsan.

To return to my argument in favor of the choroid plexus as the source of the cerebrospinal fluid, have we not in the artificial hydrocephalus, which I have produced in the laboratory, a very suggestive bit of testimony? And what of the decided increase in the rate of flow, such as Dixon and Halliburton[4] observed after the injection of the extract of choroid? And again, if the pressure of the cerebrospinal fluid is the same as that of the capillaries, there can be no escape of fluid from the capillaries in the form of a filtrate or transudate.

Has the cerebrospinal fluid a dual source? On the operating table with brain surface exposed, under conditions of high intracranial pressure, one sees drops of

* Read at the annual meeting of the Section on Neurology and Psychiatry of the New York Academy of Medicine, Jan. 21, 1915.

1. Mott, F. W.: The Cerebrospinal Fluid, Lancet, London, July 9, 1914.

2. Goldmann, E.: Experimental Research on the Functions of the Choroid Plexus and Meninges of Brain, Arch. f. klin. Chir., 1913, ci, No. 3.

3. McIntosh: Proc. Roy. Med. and Chir. Soc., London, 1914, lxxxviii, 320.

4. Dixon and Halliburton: Jour. Physiol., 1913, xlvii, 215.

fluid appearing on the surface, as though the fluid came directly from the brain substance itself or from its blood vessels, an observation which Spina made also in his experimental work. There are a number of observers with whom I am disposed to agree, Weed,[5] Plaut, Rehm and Schottmüller,[6] and Hauptmann,[7] who concede that the greater part of the fluid is derived from the choroid plexus, but hold that some is derived from the perivascular system of the nervous tissues. In a case of internal hydrocephalus with complete obstruction of the ventricles, Dandy and Blackfan[8] were able to recover by lumbar puncture 5 c.c. of cerebrospinal fluid which reformed in a short time—quite positive evidence, it seems to me, of an extraventricular source of the fluid, inasmuch as no fluid from the plexus could possibly reach the subarachnoid space.

At this juncture, although the problem is complicated by so doing, we must acknowledge, at least tentatively, that the cerebrospinal fluid originates in part, in structures other than the choroid plexus. I say acknowledge with regret, advisedly, because this dual source of supply introduces a confusing element. Can the cerebrospinal fluid be in part a true secretory product, and in part an effusion or an infiltrate? Truly that fluid which is derived from the secretory cells of the choroid gland cannot be the same biologic product as that which is the product of brain metabolism, reaching the subarachnoid space through the perivascular system. No one seems to have considered or investigated this problem, which to my mind can only be explained by admitting that the cerebrospinal fluid is composed of two constituents, differing chemically and physiologically. We have approached this problem from the laboratory point of view and we are attempting to eliminate the choroid plexus altogether, so that a differentiation between these fluids of dual origin may be possible.

FUNCTION

It may, at first glance, seem as though a discussion of the function of cerebrospinal fluid was a matter of only academic interest, but at least our review would be incomplete, did we not consider it. Chemically considered, the cerebrospinal fluid has no analogy in human physiology; it is analogous neither to lymph nor to the contents of the various serous cavities. What is this unique fluid? Has it no other function than mechanically, as a water bed, to protect the brain and cord against shock and injury, or to support the arteries and, as a water cuff, to maintain a uniform pressure? Is it only to preserve the delicate balance of intracranial pressure—a delicate, self-adjusting mechanism equalizing and distributing pressure throughout the entire intracranial and intraspinal cavities, during such varying conditions as cardiac systole and diastole, inspiration and expiration, in health and disease? The cerebrospinal fluid serves a compensatory purpose in cases of atrophy or shrinking of the brain, as in cases of epilepsy or in congenital defects, filling up the dead spaces and thus surrounding the brain, its arterial and venous channels, with a degree of pressure necessary to maintain the proper balance. No doubt these purely physical activities constitute part of the function of the cerebrospinal fluid, but there must be other functions, of even greater importance.

A very interesting hypothesis has been advanced by Kafka[9] and Goldmann[2] that the cerebrospinal fluid together with the choroid plexus may protect the nervous system against infection. By withholding certain harmful materials, and by creating ferments, the nervous system is thus protected. To show the effect of the choroid plexus as a barrier, we injected 1 c.c. of a 1 per cent. solution of trypan blue into the jugular vein of a rabbit, and though the plexus cells were stained, there was no disturbance of the nervous system. On the other hand, the injection of 2 c.c. of a 1 per cent. solution into the subarachnoid space was fatal in twelve hours.

Inasmuch as it has been shown that there is in the nervous system a canalicular system composed of the perivascular lymphatics which are continuous on the one hand with the pericellular or perineuronal spaces, and, on the other, with the subarachnoid space, according to the anatomic studies of Key and Retzius and others, the staining experiments of Quincke and Jacob, Lewandowsky, Bruno, Goldmann and others, and the microscopic studies of Mott and Hill, it seems but natural to suppose that the cerebrospinal fluid, in its passage through the subarachnoid space and along the perivascular and pericellular spaces, should be the medium of exchange between the capillaries and nerve cells. For example, it has been suggested (Mott) that the cerebrospinal fluid gives up water and carbon dioxid to the blood in exchange for oxygen and sugar. As a matter of fact, large quantities of carbon dioxid have been found in the cerebrospinal fluid and by some[4] the excess of carbon dioxid is believed to act as a cerebral lymphagogue. Kopetzky, in his studies of the cerebrospinal fluid in relation to meningitis, found it contained toxic material, the result of disordered metabolism of bacterial action and fermentation.

Furthermore, the cerebrospinal fluid may be the medium of distributing the active principle of the pituitary to the tissues of the central nervous system. At least this active principle has been found[10] in the cerebrospinal fluid, and if the pituitary body and its secretions are as essential to metabolism as we are now inclined to believe, this function of the cerebrospinal fluid as a carrier of the active hypophysial prinicples, becomes one of first rank.

Although differing in its constituency from lymph, the cerebrospinal fluid performs functions that may be analogous. The choroid plexus in its activity as a filter, has its prototype in the lymph node; the function of lymph is to provide the tissues with materials they require, and to carry away those which have served their purpose. Thus, of cerebrospinal fluid it may be said that it brings oxygen and glycogen to the tissues and carries away carbon dioxid and the products of brain metabolism, normal and pathologic.

PRESSURE

In my daily rounds, I find myself frequently making observations of the pressure of the cerebrospinal fluid, and as a consequence, I have a mass of data and figures, which I must confess have not, as yet, been fully digested. This feature of the cerebrospinal fluid has been the subject of elaborate theoretic studies in the lower animals, chiefly with reference to the conditions which affect pressure; but many of these have little if any practical bearing. I have already published the

5. Weed, L. H.: Studies on Cerebrospinal Fluid, Jour. Med. Research, September, 1914.
6. Plaut, Rehm and Schottmüller: Leitfaden zur Untersuchung der Zerebrospinal Flüssigkeit, Jena, 1913.
7. Hauptmann: Neue Deutsch. Chir., 1914, xi, 435.
8. Dandy, Walter E., and Blackfan, Kenneth D.: Internal Hydrocephalus, Am. Jour. Dis. Child., December, 1914, p. 406.
9. Kafka: Ztschr. f. d. Neurol. u. Psychiat., 1913, xv, 462.
10. Cushing and Goetsch: Jour. Physiol., 1910-1911, xxvii.

results of my own observations on the influence of respiratory movements and of the effect of disturbance of the arterial and venous circulation. What interpretation should be placed on variations in pressure and what significance should be attached to a substantial increase in the cerebrospinal pressure is, however, a matter of practical moment. Personally, I attach a good deal of importance to high cerebrospinal pressure, both in matters of diagnosis and in plan of treatment. Only the other day, a physician consulted me about his patient, perplexed as to whether he was dealing with a purely functional or an organic lesion. There were reasons, perhaps, for taking both points of view, but, on measuring the cerebrospinal pressure, when the fluid was being withdrawn for a Wassermann test, I found it 60 mm. Hg. This to my mind turned the balance at once in favor of an organic lesion.

Considerable difficulty confronts us, however, in any attempt to formulate standards or gages or to make comparative studies, because the so-called normal varies so with different observers. I would recommend that the clinicians of this country adopt a standard instrument and that certain regulations be formulated under which observations should be made. To show the disparity of various observers, I quote a few authorities: Adamkiewicz, 80-100 mm. water; Key and Retzius, 160-200; Quincke, 40-60; Kronig, 125-150, etc., etc.[11] In other words, there is a variation *in minimo* of from 40 to 160 mm. of water, and *in maximo* from 60 to 200 mm. of water under normal conditions. While the majority of observers measure in units of water pressure, I have found a small mercury manometer the most convenient and for all practical purposes quite as sensitive to slight variations. Accompanying the manometer is a special lumbar puncture needle, with a Y-shaped attachment so that no fluid can escape until the first reading is made. If this or another equally efficient instrument were accepted as standard, and all readings made with it under standardized conditions, we would soon be able to assemble an array of statistics that would enable us to valuate and interpret the readings of cerebrospinal pressure.

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SECRETION

At first thought it seems commonplace and elementary to call attention to the fact that in every disease in which there is a departure from the normal in quantity of cerebrospinal fluid, it is in the direction of increase and not decrease. In the treatment of all intracranial lesions, whether it be hydrocephalus, epilepsy, meningitis, tumors or what not, the excessive accumulation of cerebrospinal fluid has to be reckoned with, and the problem is ever before us: What are the factors which so disturb the balance between secretion and absorption as to be accompanied by a superabundance of fluid? Can one or the other be controlled? To answer these inquiries, I must take you for a while into the field of research. It seemed to me that the logical way to approach this problem was to attack it at its source, to ascertain whether there were any substances, either chemical or glandular which would influence the rate of secretion of cerebrospinal fluid by the choroid plexus. My assistant, Dr. Peet, and I spent the greater part of a year on this problem alone, and our observations covered all of the glandular extracts, spleen, kidney, pancreas, testes, ovary, liver and adrenal, as well as such substances as urine, bile, cerebrospinal fluid, chloroform, ether, amyl nitrate, magnesium sulphate, and physiologic salt solution.[12] I approached the problem from the point of view that in the choroid we were dealing with a secretory gland, the activity of which might be influenced just as it has been found possible to influence the function of the thyroid gland.

Before we had collected many tracings, it became evident to us that the results were more or less uniform in that, whenever the rate of flow was disturbed it was always *accelerated*, not *diminished*, and, furthermore, that coincident with the increased flow there was a fall of blood pressure. The greater the fall of pressure, the more rapid the flow. Just as soon as the blood pressure returned to normal, the flow would begin to slow down. It will suffice here to mention the general results, which, although varying in degree, were common alike to the injection of extracts of spleen, kidney, pancreas and liver. This apparent increase in the quantity of cerebrospinal fluid coincident with the fall of blood pressure, we interpreted as due to the sudden dilatation of the cerebral sinuses forcing out fluid which had accumulated in the ventricles and subarachnoid space, and not to any stimulating action of the extracts on the choroid glands.

Thus far the results may be said to have been negative; but the next series of observations revealed the fact that brain extract caused an actual increase in the cerebrospinal fluid, wholly independent of the amount of fall in blood pressure. In other words, a substance had been found which of itself had some specific action on the choroid gland. Dixon and Halliburton[13] had come not only to the same conclusions regarding brain extract, but found that the increased output was more striking following the injection of the choroid plexus, and on their findings they promulgated the theory of a specific hormone—a choroid hormone—a chemical substance, the product of brain metabolism, stimulating the secreting epithelium of the choroid plexus and increasing its output.

Even though we had been able to find only substances which resulted in hyperactivity and none in hypoactivity, nevertheless a definite physiologic fact had been established, and we were sufficiently encouraged to continue the research in the hope of finding some substance having a specific action on the choroid gland, but in the nature of *inhibition*. To make a long story short, we discovered in thyroid extract a substance which of itself had a specific inhibitory effect on the action of the choroid plexus. Wholly irrespective of any other extraneous factors such as blood pressure, respiration, etc., when injected in sufficient quantities, thyroid in the form of fresh human, or fresh dog thyroid and the commercial desiccated beef thyroid, alike caused a temporary fall in blood pressure with the usual transitory increase, but following that a *prolonged* period in which the flow of cerebrospinal fluid was reduced to one-third that of normal. We have pursued this line of investigation further in search for the constituent of thyroid tissue that is the active agent. Alcoholic extracts of thyroid gland are practically inert.

Quite recently, we have been working with diiodotyrosin, a synthetic product identical with that found in the thyroid. While identical in some respects with

11. Quoted from Mestrezat, Le liquide cephalo-rachidien normal et pathologique, Paris, A. Maline, 1912, p. 85.

12. The laboratory experiments are repeated in full in a paper by Dr. M. M. Peet and myself, Am. Jour. Physiol., xxxv, No. 3, 1914.

13. Dixon and Halliburton: Jour. Physiol., Nov. 7, 1913.

thyroid tissue, it has not some of the properties of thyroid tissue, such as those which cause myxedema and exophthalmic goiter. This synthetic substance which I obtained through the courtesy of Dr. T. B. Jackson of Yale University had the same retarding influence on the output of cerebrospinal fluid, although not to so marked a degree as thyroid tissue itself.

Finally with the substances which act as cerebral lymphagogues, must be included (as brought out by Dixon and Halliburton) those which cause a deficient oxygenation with the resulting accumulation of carbon dioxid in the blood. In this group are pilocarpin, which interferes with respiration, amyl nitrate, anesthetics and narcotics.

Reference may be made here to my observations both in the laboratory and the clinic of the effect of the ligation of the common carotid arteries on the secretory rate. It had been suggested that the output of cerebrospinal fluid might be controlled by ligation of the common carotid arteries and this operation has even been recommended as a treatment of hydrocephalus. We found, however, both in the clinic and in the laboratory, that the rate of secretion was practically uninfluenced by ligation and assert that the operation is without justification, and therefore that it should not be endorsed. In the case of an inoperable brain tumor with distended ventricles, it was possible after the operation to introduce a cannula through the scalp directly into the ventricles. The latter were tapped on several occasions, the cerebrospinal pressure recorded before and after the withdrawal of measured amounts of fluid and the time required for the ventricles to refill was noted. These observations were repeated both before and after ligation, first of one then of both common carotid arteries. In both instances the fluid reaccumulated at the same rate and with the same degree of pressure.

ABSORPTION

The companion problem to that of secretion is the problem of absorption, and on this much light has been shed by recent investigations. We may accept without question the general statement that the major portion of the cerebrospinal fluid leaves the subarachnoid space via the venous channels rather than via the lymphatics. I need not retail the staining experiments which have proved to us the truth of this. It is true that fluid does escape by the nerve sheaths and into the lymphatic system, but only very slowly and in comparatively small quantities.

That the system of absorption was a very elastic one, capable of meeting demands much beyond those of normal conditions, was impressed on me years ago, when, in studying the problem of intracranial tension, I allowed by gravity, salt solution to flow into the subarachnoid space. To my amazement, amounts varying from 500 to 1,000 c.c. of saline solution would be absorbed within an hour or two from the subarachnoid space of a dog. Perhaps the physiologic properties of salt solution may make it a more favorable solution for absorption.

In altogether another connection, I compared the absorption of salt solution with that of cerebrospinal fluid from the subcutaneous tissues. The inefficiency of many attempts at drainage of the subarachnoid space subcutaneously had always been difficult of interpretation. I knew that within the cranial cavity drainage via the lymphatics was a negligible quantity, but I could not explain the accumulation of fluid in the subcutaneous tissues with free communication with the lymphatics. My simple experiment consisted in injecting equal quantities of cerebrospinal fluid and salt solution at corresponding points over the rectus muscle, to either side of the median line intracutaneously, producing a wheal-like swelling, the size of a penny, readily seen and felt. In every instance the wheals would disappear within a few minutes and the wheal of cerebrospinal fluid just as rapidly, if not more so, than that of normal saline solution. The experiment, if it can be dignified by that term, was both positive and negative in its results. It demonstrated the readiness with which cerebrospinal fluid is taken up by the superficial lymphatics, but did not explain, as I had hoped, the frequent failures after subcutaneous drainage, as in cases of hydrocephalus.

A problem in absorption, which more than any other attracted my attention, was the rapidity of elimination of phenolsulphonephthalein after its injection into the ventricles. Within two hours of the injection, we recovered from the urine *60 per cent. of the drug.* At this rate there should be a complete replacement, if we can assume that a proportional quantity of cerebrospinal fluid is absorbed in the same time, of the total amount of cerebrospinal fluid every three or four hours, at the rate of a replacement of one-third the total amount every hour. This, to my mind, emphasizes the importance of the cerebrospinal fluid as a medium for the elimination of waste products. If, under normal conditions, there are from 60 to 120 c.c. of cerebrospinal fluid, and if this amount is replaced every three or four hours, the entire amount secreted for the twenty-four hours should total from 360 to 720 c.c.

The debatable questions in the physiology of absorption are as to the channels of escape and as to whether absorption is restricted to a certain area or whether it is a diffuse process limited only by the extent of the subarachnoid space. On the injection of phenolsulphonephthalein into an artificially blocked ventricle, we found that practically no absorption took place; after two hours there was only the slightest trace and this not constant, compared with 60 per cent. absorption in two hours when injected into the unobstructed ventricle. We have thus eliminated the ventricle, which in function is comparable to the urinary bladder, serving merely as a reservoir.

Is absorption a process of diffusion directly into the capillary network of the subarachnoid space? Is it a process of filtration via the arachnoidal villi, the precursors of the pacchionian bodies, into the great sinuses? If we accept the theory that the cerebrospinal fluid is the ambient medium of exchange between blood and nerve cells—a priori, a very plausible one—we would be prepared to accept the theory of capillary absorption. It would be idle to ramble into a discussion as to the relative merits of either theory. I can see in either a matter of no practical moment, for the very patent reason that the theories apply really to normal conditions, that is to say, conditions of normal cerebrospinal and vascular pressure. Just as soon as the cerebrospinal pressure is increased, channels of escape other than those attending normal conditions become available.

This point may be illustrated by the perversion of the lymph circulation under abnormal conditions such as carcinoma. As the lymph circulates in normal conditions, we could readily foretell where to look for lymph node metastasis, but just as soon, as in carcinoma, the natural lymph channel is occluded, the lymph

circulation and with it cancer cells, may be forced into many devious and anomalous paths.

Whether the process of absorption is confined to certain areas of the subarachnoid space, is diffuse or limited, is to be determined by further investigation. If one may be permitted to express an opinion based largely on that of the clinic, but partly on laboratory observation, I would say very definitely that the amount and rapidity of absorption was in proportion to the total area of subarachnoid space available. You have all observed that with tumors of the posterior fossa there is greater intracranial pressure; this implies a larger quantity of cerebrospinal fluid and this, in turn, delayed absorption. Now in the laboratory we found that, when a column of fluid was introduced into the cisterna magna at a pressure in excess of venous pressure, the midbrain was forced upwards and the isthmus of the tentorium blocked. To prove that the passage of fluid from the posterior to the anterior fossa was blocked, the cortex was inspected through a parietal trephine opening. No fluid was seen. To correlate this clinical and laboratory observation—if absorption takes place from the subarachnoid space throughout, the elimination of the extensive cortical area of both hemispheres reduces the absorptive area to a considerable degree. Is it not possible, then, for a tumor of the posterior fossa to block the passage of cerebrospinal fluid through the tentorium, and, as in the above experiment, interfere seriously with absorption?

Before the problem of absorption can be solved, we must know more of these pathologic factors which retard the process, and which of the various factors may prevail in given conditions. What is the pathologic factor in hydrocephalus? What is it in epilepsy? What is it exactly in brain tumor? These are problems for us to investigate further.

From these cursory observations of the fundamental problems having to do with the origin and circulation of the cerebrospinal fluid, we turn now to considerations of clinical conditions in which the cerebrospinal fluid is an important factor.

In all forms of meningitis it has to be reckoned with, because hypercranial pressure, as caused by acutely distended ventricles, is often the determining factor in fatal cases. Apart from repeated lumbar puncture to relieve tension, there are no measures to be considered other than the use of specific serums when available. I have yet to see a case of tuberculous meningitis of acute type recover when pressure was relieved by decompression. Nor have I seen or heard of any cases of suppurative meningitis which have been cured by drainage of the cisterna magna.

That more obscure form of meningitis, obscure at least as to origin, the so-called serous meningitis or as Reichmann calls it, aseptic meningitis, presents very positive indication for relief of pressure by such operative measures as subtemporal or suboccipital decompression. For illustration I may allude to two cases of my own: in the first, that in a boy with symptoms of extreme tension and impending blindness, I decompressed in the temporal region. He developed a tremendous swelling at the site of the operation, and immediately the distressing symptoms were relieved. The process of resolution extended over a period of months (the etiology always undetermined), until finally, almost a year after the operation, the tension at the site of the cranial opening disappeared, and the boy, apart from defective vision, was restored to health. I cite this case to illustrate the advantages of a temporal decompression over lumbar puncture under such circumstances, but more particularly to call attention to peculiar and striking fluctuations in the degree of tension at the site of the opening in the protracted course of the disease. Without apparent cause and at irregular intervals there would be a return of all the symptoms with signs of extreme tension for periods lasting for from a few days to a week.

In the second case, after a suboccipital decompression, relief was afforded for only a few days. The symptoms and physical signs of hypertension returned and unless from 5 to 10 ounces of fluid were withdrawn daily, the boy was in great agony from headache, pain in the eyes, and pains referred to the epigastrium. I succeeded in this case in supplying a safety valve, as it were, by draining the cavity of the posterior fossa into the right pleural cavity, a method Dr. Peet had found of practical value in the laboratory. This was accomplished with two heavy strands of braided silk (Handley's silk) which were carried subcutaneously from an opening into the cisterna magna at the base of the neck to the angle of the scapula, where after resecting ½ inch of the right rib, the other ends of the silk strands were introduced into the pleural cavity. The operation was devoid of any difficulties and it may prove to have a wider application for the relief of those effusions within the skull, so often the proximate cause of grave cerebral symptoms.

Vomiting, headache and papilledema, as symptoms of brain tumor, are the expression of hypertension within the cranial chamber, but this hypertension is never, perhaps I should say rarely, due to the mere accession to the contents of the cranial chamber, of the tumor itself. On the contrary, it is always, acknowledging exceptions, the result of excess of cerebrospinal fluid distributed throughout the subarachnoid space. Time will not permit of my treating this *in extenso*—I have covered the subject in a recent communication[14]—but only briefly to state a few unquestionable truths. Increased intracranial tension in tumors is the result of a secondary hydrocephalus, whether the tumor be cortical, subcortical or basal, large or small, malignant or benign. Tumors, irrespective of their size, character or seat, may exist *without signs of tension*. Subtentorial growths show signs of increased tension earlier because for patent reasons, they interfere more readily with absorption of cerebrospinal fluid. The excess of fluid may be in the ventricles alone, in the basal cisterns alone, or distributed throughout the subarachnoid space. The excess of cerebrospinal fluid in brain tumors is not, I believe, to be explained on a physical basis, that is, only as a problem of absorption. I find evidences in brain tumors of hypersecretion also, perhaps an expression of disturbed brain metabolism. Palliative treatment in brain tumors resolves itself largely into the problem of dealing with the associated hydrocephalus, and, therefore, accompanying decompression or preceding it, puncture of the corpus callosum should always be thought of.

Hydrocephalus has long been the *bête noir* of the neurologist and the surgeon. Four centuries before Christ, Hippocrates tapped the ventricles in the treatment of hydrocephalus, and for twenty-three and almost twenty-four centuries, we stood pretty much where Hippocrates did so far as therapeutic accomplishment was concerned. Of late, however, by

14. Frazier, C. H.: The Cerebrospinal Fluid and Its Relation to Brain Tumors, New York Med. Jour. June 27, 1914.

experiment and observation, certain definite contributions have been made that cannot but clear up some of the difficulties in diagnosis and treatment. In our laboratory we have been able to produce an artificial hydrocephalus by means of which it has now become possible to differentiate types of hydrocephalus; for example, an obstructive or a non-obstructive type. Of a given amount of phenolsulphonephthalein injected into the ventricles, 60 per cent. should be recovered in the urine in two hours. This test becomes one of great value not only as a guide to pathogenesis, but also to treatment. For example, the other day I was consulted as to the proper treatment in a case of hydrocephalus. The test was applied. The elimination of phenolsulphonephthalein in two hours, was 2 per cent. instead of 60 per cent. The chief pathogenic factor in this case was delayed absorption. The treatment, therefore, becomes a problem of drainage.

Of the non-obstructive type, I am not prepared to speak so dogmatically, although by deduction one would ascribe it to a state of hypersecretion, and if this were true, treatment should be aimed at the secreting organ, the choroid gland. How much reliance can be placed on our laboratory experience the future will decide. You will recall the effect of thyroid extract in diminishing the output of cerebrospinal fluid. While one swallow does not make a summer, one of several cases of hydrocephalus, now under treatment with thyroid extract, has so improved, that at the last report the child was, so far as one could judge, normal. I mention this single instance not with any feeling of overconfidence, but merely in the hope that others may be encouraged to apply this treatment in suitable cases and determine its efficacy.

Of the many methods of draining in the non-obstructive cases, and the methods increase in number faster than they do in effectiveness, I speak hopefully of the one I have proposed, that of draining the basal cisterns into the pleural cavity.

In this cursory review, I have touched only on what might be said to be the issues of the day in the physiology of the cerebrospinal fluid. The subject is capable of expansion and development in many directions, and what we know to-day may be but a fragment of the truths yet to be revealed. Obscure as many phases still are, the facts we have in recent years acquired have a very real and practical bearing on many different clinical problems. May we not then forecast a greater mastery over many lesions of the nervous system, hitherto baffling and obscure?

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Biology and the Social Sciences.—I am led to the suggestion of a more intimate relation between biologic and social sciences because great discoveries which give a new direction to currents of thought and research are not, as a rule, gained by the accumulation of vast quantities of figures and statistics. These are apt to stifle and asphyxiate and they usually follow rather than precede discovery. The great discoveries are due to the eruption of genius into a closely related field, and to transfer of the precious knowledge there found to his own domain. It is not so very long ago when medicine paid but little attention and less respect to the unusually rich field of animal life as a source of information. To-day, every department of medicine fills its available working spaces with animals which are subject of profound study. The results have revolutionized human medicine within a generation.—Theobald Smith: *Boston Med. and Surg. Jour.*

EXPERIMENTS RELATING TO THE VIRUS OF VERRUGA PERUVIANA

FOURTH REPORT *

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TRANSMISSION TO ANIMALS AND CULTIVATION OF THE VIRUS OF VERRUGA

Numerous inoculation experiments have been made in animals with material removed from various lesions of the skin in verruga peruviana. We have already referred in previous publications to the fact that we were unable to transmit the parasite of Oroya fever to animals, and that intravenous inoculations of the blood containing the parasites *Bartonella bacilliformis* into monkeys and rabbits, and intratesticular ones into rabbits produced neither local lesions, verrugas on the skin, nor lesions elsewhere. The inoculations performed on animals with the virus of verruga gave positive results in these animals, and the production of definite lesions, which in the case of monkeys when the inoculation was made on the skin, very closely resembled those observed in the human cases of the disease.

In performing these inoculation experiments in the manner in which we did, several objects were in view: first, to determine if the disease was directly inoculable; second, to determine if a visible micro-organism was present in the lesions; third, to determine if a spirochete was present, and fourth, to differentiate the disease from frambesia and syphilis. In this article, therefore, all of these points will be discussed more or less widely.

Frequently a portion of the pathologic material obtained from the human verruga cases and used for making inoculations in animals was also employed in experiments in relation to the cultivation of the virus in vitro, and sometimes for the determination of whether the virus was of a filterable nature or whether its presence could be detected by the microscope either in stained smears or sections. The results obtained in relation to each of these problems will now be discussed.

TRANSMISSION OF THE VIRUS OF VERRUGA TO ANIMALS

It has been found that the monkey is the most satisfactory animal for inoculation purposes. If the skin over the eye is scarified and a small portion of a verruga nodule rubbed into the abrasions, after an incubation period usually of from ten to twenty days, small papules appear which gradually enlarge and later assume the typical picture of the verruga nodules as seen in human beings. The nodules thus produced also have a similar histologic structure to those observed in man, a fact that will be referred to again. We have transmitted this virus from animal to animal through twelve successive series of monkeys since our departure from South America over a year ago. In twenty-five monkeys typical lesions have been produced in this manner.

When the monkey is inoculated with the virus either directly from man or from another monkey, only a

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localized lesion develops and no generalized eruption occurs. When this animal is inoculated with smallpox virus, also only a modified form of the eruption is produced. The monkey is not apparently as susceptible to either the virus of verruga or that of smallpox as is man. The virus of verruga also calls forth no appreciable febrile reaction in the monkey inoculated with it, and none of the monkeys died from the inoculation with this virus. The lesion in the monkey as a rule gradually begins to fade away four or five weeks from the time of the inoculation. The virus also may be sometimes transmitted to rabbits and to dogs. In the dog the subcutaneous inoculation occasionally produces a lesion which is much more vascular than the one produced in the rabbit's testicle.

On intratesticular inoculation of the virus into rabbits or dogs, a more or less characteristic lesion is sometimes produced after an incubation period varying from ten to twenty-two days. The lesion usually measures several millimeters in diameter, and is sharply circumscribed from the surrounding tissue. In the rabbit's testicle it suggests in its appearance not a lesion which has resulted from an acute inflammatory process, but rather one which has arisen from a rather low grade of inflammation. By repeated inoculations of this character, however, the virus becomes gradually attenuated, and finally inoculations of this nature fail. In only a certain percentage of the inoculated rabbits does a lesion develop. This fact suggests that rabbits are not very susceptible to the virus.

In the earlier literature on the subject of verruga peruviana and Oroya fever, it has been repeatedly stated that the lower animals were susceptible to the disease, and that the infection had been observed in animals, and particularly in dogs, cats, mules and poultry. Scheube and Manson refer to these statements. Manson points out in this connection that if the lower animals were susceptible to the disease, it is curious that Carrion chose to experiment on himself. Scheube calls attention to the fact that animals have also been reported to suffer from Oroya fever. Barton claimed the production of a verruga-like eruption on the skin of dogs following the inoculation of an organism said to have been cultivated from cases of Carrion's fever, and afterward shown to be a paracolon bacillus. As a matter of fact, there was no demonstration that the virus of verruga could be transmitted to animals until experiments with monkeys were undertaken. We have already referred to our work on this subject.

Jadassohn and Seiffert[1] in one case of verruga peruviana, and Mayer, Rocha-Lima and Werner[2] in another case, both of which were studied in Europe, also succeeded in transmitting the virus to monkeys through several generations. Cole[3] showed from a study of Jadassohn's case, and the material from the animal lesions, that the histologic structure of the nodules produced in the monkeys was also similar to that of the human lesions, an observation which we have been able to confirm. In Lima more recently Dr. Ribeyro also transmitted the virus of verruga to a monkey in which we observed the lesions develop. So far as we know up to the time of writing, no published report of this experiment has yet been made. These experiments and our own on monkeys, dogs and rabbits, already described, are the only ones that have demonstrated that the virus of verruga is transmissible to the lower animals. We did not observe any cases of natural infection of the disease in dogs, cats, donkeys or poultry, and do not believe that the disease occurs naturally in these animals. In fact, the monkey is the really only satisfactory animal for inoculation purposes in this disease.

In the transmission of the virus from man to animals it is noticeable that in monkeys, and as has been mentioned particularly in the intratesticular inoculation of the rabbit, the inoculation often fails, and no lesion results. It would appear that the virus is only transmissible during a certain stage of the disease even in man, and that unless it is obtained from the lesion of the human case during that stage, it is either innocuous for animals or its virulence is greatly reduced. Also, the susceptibility of the animal to the infection obviously must play a rôle in regard to the percentage of animals in which the inoculation succeeds and a definite lesion results. In monkeys the percentage of successful inoculations is much higher than in rabbits, and the virus, while it becomes attenuated by successive passages through these animals, does not become nearly so quickly attenuated in this manner as it does by successive passages through the rabbit's testicle. When once the virus has been successfully transmitted from the human lesion to the monkey, however, it may be sometimes carried through many successive passages in these animals, as has been already emphasized.

CULTIVATION AND FILTERABILITY OF THE VIRUS OF VERRUGA

Many experiments have been undertaken in the cultivation of the virus of verruga from material obtained from human lesions and from those produced in the rabbit's testicles. The results obtained in these experiments show that even in those cultures which suggested from their appearance the possibility of a growth, no definite micro-organism could be demonstrated by microscopic examination or by subculture, and on inoculation of these cultures into the rabbit's testicle, no lesions were produced. While the results alone of the inoculation experiments into animals of this nature do not preclude a cultivation of the virus, since by this method of inoculation only a small proportion of rabbits may be expected to develop lesions even when the fresh virus is employed, nevertheless, the results of these experiments do not give any support to the idea of a successful cultivation of the virus. Numerous attempts have also been made to cultivate the virus in vitro from the verruga lesions produced in monkeys by its inoculation.

These experiments and those performed in relation to the cultivation of the virus from the human and rabbit lesions have usually resulted in failure. Various modifications of the methods described by Noguchi and Murphy for cultivation have been employed. Great difficulty has been experienced in obtaining the material from monkeys free from bacteria. The monkeys almost invariably scratch and infect secondarily the lesions. It is not deemed advisable to consider in detail all of the experiments which have resulted in complete failure of cultivation of the virus from the lesions produced in these animals. However, the results will be briefly referred to which were observed in a series of cultures made in ascitic fluid containing rabbit's testicle to which had been added exudates produced by injections of aleuronat

1. Jadassohn and Seiffert: Ztschr. f. Hyg. u. Infectionskrankh., 1910, lxvi, 247.
2. Mayer, Rocha-Lima, and Werner: München. med. Wchnschr., 1913, No. 14.
3. Cole: Jour. Cutan. Dis., 1913, xxxi, 384.

containing leukocytes and small fragments of verruga nodules.

In several instances such cultures showed certain differences from the control ones, notably in a cloudiness of the media, and in the formation of a fine granular precipitate along the sides and bottom of the tube. This precipitate perhaps resulted from disintegration of the tissues in the culture by the growth of the virus. Apparently it did not constitute itself a living organism, as these cultures revealed no bacteria or other visible micro-organism, and subcultures on agar gave no apparent growth. In the case of one monkey, inoculated with such a culture which had been incubated for sixteen days at 37 C. (98.6 F.), a small group of reddish papules appeared in a row on each brow after an incubation period of twenty-one days. These papules, however, never developed into as extensive lesions as almost invariably happens when the fresh virus is used, and they disappeared in a shorter time. Thus it appears that while the virus was still alive in the culture medium, it had evidently become more or less attenuated. Other attempts to infect monkeys with cultures have failed. Experiments in cultivation were continued, but with no further success. In the successive passage of the virus through monkeys, it has become increasingly difficult to obtain sufficient satisfactory material from which to prepare the cultures. The most satisfactory material for work in cultivation of the virus can be secured directly only from the human cases. The cultivation of the virus of verruga, then, seems to be to-day in a somewhat similar position to that of the virus of small-pox.

FILTERABLE QUALITIES OF THE VIRUS

Experiments were also performed to demonstrate the filterable qualities of the virus. Rabbits, inoculated with the diluted filtrates of suspensions made by grinding the human lesions in saline solution, developed no lesions. These experiments are not conclusive, however, since, as has been emphasized, only a portion of the rabbits inoculated with the virus itself by the intratesticular method develop lesions. No monkeys were available for filtration experiments, while human material was available. Although we had been informed that monkeys were plentiful in Peru, we had the greatest difficulty in obtaining them on the western coast of South America, and it was necessary to import them via Panama. Subsequently, however, experiments were performed relating to the filterable qualities of the virus with material obtained from the lesions produced in monkeys by inoculation of the virus after numerous successive passages of it through these animals. In the experiments in which portions of the verruga nodules from monkeys were finely ground, suspended in water or saline solution, and the resulting mixture passed through Berkefeld filters (No. 2), the filtrates failed to produce lesions in monkeys, and monkeys inoculated with such filtrates were not rendered immune to subsequent infection with the unfiltered virus. Either the virus was present in too small amount in the filtrates, or was in too attenuated a condition to give rise to the production of lesions in an animal so relatively insusceptible to the infection as is the monkey, or else it had failed to pass through the pores of the filter. Nevertheless, we have been unable to detect by microscopic examination either in numerous fresh preparations, often examined with the dark field microscope, or in stained preparations made from the verruga lesions, or in cultures made from them, or in sections from the tissues, any definite visible micro-organism. It seems not unlikely that the virus of verruga will ultimately be shown to be a filterable one.

As is well known, the success in filtering a virus or organism depends not only on the form and dimensions of it, and the texture and thickness of the filter used, but on the pressure employed, the duration of the filtration, and the composition of the liquid in which the virus or organism is suspended. The results obtained in animals inoculated with the filtrates of some of the "filterable viruses" are frequently not constant, and before it can be definitely asserted that a virus is non-filterable or filterable, very extensive experimentation with a large amount of material is sometimes necessary.

For many years the virus of small-pox was regarded as non-filterable, and in many experiments made in connection with the filtration of this virus, the filtrates of it often fail to produce lesions in monkeys. Sims Woodhead[4] has recently again called attention to this fact, and has mentioned that during an epidemic of small-pox he attempted to obtain vaccine by filtration, but found that not a trace of active vaccine was found in the filtrate after the process was completed, whether the dilution was high or low. Further experiments in relation to the question of the filterability of the virus of verruga should be performed with perfectly fresh material obtained from the human lesions, and the inoculation of the filtrates should be made into human beings or into monkeys to demonstrate whether the virus has passed through the pores of the filter in sufficient amount to produce lesions. Mayer, Rocha-Lima and Werner[5] have performed a single experiment regarding the filterability of the verruga virus. In this instance the filtrate from a Berkefeld candle of a suspension of four ground papules removed from their case was inoculated over the eyes of a monkey. The experiment resulted negatively, and no lesion resulted. As the virus becomes altered in its repeated passage through monkeys, the results of the experiments regarding its non-filterable qualities which have been performed by us on monkeys should not be considered conclusive.

In connection with the consideration of the virus of verruga peruviana, the important researches of Rous[5] relating to the nature of the filterable agent causing sarcoma of the fowl are of great interest.

SIMILARITY BETWEEN THE VIRUS OF VERRUGA AND OF SMALL-POX

We have called attention to the fact that when monkeys are inoculated with the virus of verruga, no generalized eruption occurs on the skin, but only a localized lesion. The small-pox virus also calls forth only a modified eruption in these animals. Neither the virus of small-pox nor that of verruga, as we have shown, has been satisfactorily cultivated in vitro on artificial media. In several other ways the virus of verruga shows some similarity to that of small-pox, but in other ways obviously the two behave very differently. So far no definite visible micro-organism has been discovered in verruga peruviana, although Mayer, Rocha-Lima and Werner,[6] in the study of a single

4. Woodhead, Sims: Proc. XVII Internat. Cong. Med., London, 1913, Sect. 4, Bacteriology and Immunity, p. 122.
5. Rous: THE JOURNAL A. M. A., 1911, lvi, 198. Rous, Peyton, and Murphy, J. B.: The Nature of the Filterable Agent Causing a Sarcoma of the Fowl, ibid., June 22, 1912, lviii, 1938.
6. Mayer, Rocha-Lima and Werner: München. med. Wchnschr., 1913, No. 14; Verhandl. d. deutsch. path. Gesellsch., 1913, p. 198.

case, reported the presence of bodies resembling Chlamydozoa in the lesions. The cell inclusions observed in variola and vaccinia have also been referred by Prowazek[7] to the Chlamydozoa. Schilling-Torgau[8] places both verruga peruviana and variola in the list of diseases caused by filterable viruses, but he gives no evidence to support the view that the virus of verruga is filterable. Apart from the evidence obtained from our own experiments and the single negative one performed by Mayer, Rocha-Lima and Werner, already referred to in previous papers, no experiments relating to this question apparently have been performed. The filterable properties of the virus of verruga have, however, already been discussed. The virus of verruga is much less stable than that of small-pox, and after the verruga virus from animals has been glycerinized, it is at least sometimes no longer inoculable for monkeys, as we have shown. The two viruses show similarity, however, in the fact that monkeys which have been successfully inoculated with either of them are subsequently usually immune to a second inoculation of the corresponding virus. In every instance in which a monkey has been successfully inoculated with the verruga virus it has subsequently been immune to reinoculation. The verruga virus, on the other hand, produces no lesion when inoculated on the rabbit's cornea, as does the variola virus. The disease produced in man by the small-pox virus is of a more virulent type than that produced by the virus of verruga.

The clinical appearance and structure of the lesions on the skin are also entirely different, and small-pox is very contagious. The inoculation of man with small-pox virus obtained directly from a human case of small-pox, however, is not usually a dangerous proceeding, and we have shown in one case that the inoculation of a man with verruga virus obtained directly from another human case was accomplished without serious result. After considering these facts, it seems apparent that there is a slight analogy between the two viruses.

7. Prowazek: Handbuch der Pathogenen Protozoen, Leipzig, 1912, i, 119.
8. Schilling-Torgau: Mense, Handbuch der Tropenkrankheiten, Leipzig, 1914, Ed. 2, ii, 110.

A MILK BORNE EPIDEMIC OF TONSILLITIS IN TUBERCULOUS PATIENTS*

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The relation of milk to the epidemiology of certain diseases, such as diphtheria, typhoid fever, scarlet fever, etc., has been quite definitely established. The close association of epidemic sore throat to an infected milk supply, although recognized by English physicians for some years past, did not attract attention in this country until the recent study by Winslow,[1] of the Boston epidemic in 1911. A detailed analysis of 1,043 cases gave strong presumptive evidence that the original source of the epidemic was milk contamination. Winslow arrived at the following conclusions: The milk from a single dairy was the channel of distribution for the epidemic, and although no acute cases among the dairy employees were encountered, a carrier case presumably infected the milk.

Other epidemics of a similar nature have been reported in this country. Capps and Miller[2] have studied in detail the Chicago epidemic of 1911 and 1912. A bacteriologic analysis of the milk in this epidemic was made by Davis,[3] who recovered a streptococcus identical in morphology, in culture, and in pathogenicity, with a culture obtained from a human case of tonsillitis and arthritis. An extensive report of the Baltimore epidemic in 1912 has been made by Frost, Stokes and Hachtel.[4] The same year Cowes[5] reported a second outbreak in Boston. More recently the Cortland epidemic has been investigated by North, White and Avery,[6] who give an excellent historical review of the subject, and offer substantial evidence in confirmation of the previous assumption that the cause of the infection was a streptococcus, discharged from the inflamed udder of the cow into the milk. In all instances the source of infection was traceable to cases of mastitis among the herd or to illness of one of the dairy attendants. The present series of cases is apparently the first recorded instance of an epidemic of tonsillitis in a population almost exclusively tuberculous and due presumably to milk contamination. Of further interest is the type of organism isolated and the mild character that the epidemic assumed in contrast to those previously described.

The present epidemic occurred at the New York State Hospital for Incipient Tuberculosis at Ray Brook, N. Y. On the evening of Jan. 23, 1914, three patients were reported suffering from tonsillitis. Three days later the total had risen to forty out of a population of approximately four hundred. Inquiry revealed that the epidemic was sharply localized. No cases were present in the immediate neighborhood and the surrounding towns reported that no notable increase above the usual number of cases had been observed. The epidemic showed no predilection for any one division of the sanatorium, the distribution of cases being fairly uniform. There was also no evidence to show that the infection originated in the sanatorium, as no case of tonsillitis had occurred in the institution during the previous two months. The possibility that the infection had been introduced from without through the medium of a visitor to the sanatorium naturally could not be excluded. Inquiries were made to determine this point but with negative result. The data given above connected with the rapid spread of the infection, pointed to some unusual source of origin and it was tentatively assumed that one of the more universal vehicles, water or milk, was at fault. The water was examined and found to be of the usual standard quality.

The milk supply for the sanatorium is derived from two separate farms, approximately six miles apart and under one management. The dairies for convenience may be designated as "A" and "B." The entire milk supply of the two farms is consumed by the sanatorium. Farm *A* supplies two-thirds of the milk. The barn is a modern structure and in good order. The usual reluctance to answer questions was encountered, but an inspection of the herd showed the ani-

* Read before the Academy of Medicine at Toronto, Jan. 12, 1915.
1. Winslow: Jour. Infect. Dis., 1912, x, 73.
2. Capps, J. A., and Miller, J. L.: An Epidemic of Sore Throat Due to Milk, THE JOURNAL A. M. A., April 13, 1911, p. 1111; The Chicago Epidemic of Streptococcus Sore Throat and Its Relation to the Milk Supply, ibid., June 15, 1911, p. 1848.
3. Davis, David J.: A Bacteriologic Study of Streptococci in Milk in Relation to Epidemic Sore Throat, THE JOURNAL A. M. A., June 15, 1911, p. 1852.
4. Frost, Stokes and Hachtel: Pub. Health Report 47, U. S. P. H. S., 1912, xxvii, 1889.
5. Cowes: Am. Jour. Pub. Health, 1913, ii, 419.
6. North, White and Avery: Jour. Infect. Dis., 1914, i, 124.

mals in good condition and with no obvious udder trouble. The attendants appeared healthy and denied recent illness. On Farm *B* the barns are temporary structures, and as might be expected, conditions were not comparable to those of Farm *A*. One of the milkers on this farm, a lad of 14, stated that during the previous week he had been in bed for three days with a sore throat, but was not very sick at the time, and had resumed milking almost immediately after getting out of bed. His return to work occurred four days previous to the inspection of the farm. The lad appeared healthy, the throat showed no appearance of recent inflammation and the cervical and submaxillary glands were not enlarged. The boy's mother stated that another of her children had caught the disease from the boy, and was at present confined to bed. A visit to this child revealed a clinical picture strikingly like the cases at the sanatorium. The tonsils were engorged, the surface covered by a discrete exudate; the pillars and uvula were injected and there was decided enlargement of the glands at the angle of the jaw; the temperature was 102.3 F.; the pulse 112. A culture from the throat was obtained, treatment was prescribed and an antiseptic gargle prepared for the family and employees. As both the children attended the local district school, it was thought that some light might be thrown on the original source of the infection by an inspection of the records of those absent on account of illness. The number of absentees was found to be no larger than previous years. There appeared on the record, however, "absence due to sore throat" for one of the pupils, which antedated by ten days the illness of the boy on the farm. Inquiries in the neighborhood and replies from the two local physicians gave no indication of undue prevalence of tonsillitis in the immediate neighborhood of the farm.

On the evidence presented, the milk was immediately pasteurized at the sanatorium and only one case developed subsequent to this procedure. Gargles were distributed to all the patients and employees on the second day of the epidemic, while a number also received additional local treatment with hydrogen peroxid, alkaline solutions and iodin. This procedure naturally embarrassed the bacteriologic findings, and although it would have been interesting to discontinue the local treatment in order to make a more detailed bacteriologic study, under the circumstances, it was not considered a warrantable procedure. Nevertheless, a total of twenty-two cases, most of which occurred in the first forty-eight hours, have been studied bacteriologically in detail. The data obtained and presented in the accompanying chart point conclusively to a streptococcus infection as the etiologic factor in the present epidemic. Further, the interesting point developed that in fifteen of the cases the streptococci isolated gave biologic reactions identical with or strikingly similar to those of the organism isolated from the child on the farm.

The organisms isolated may be conveniently grouped as follows:

Group A.—This comprises in all, seventeen strains, including Culture 18 obtained from the child at the farm, and 24*b*, isolated from the patient developing peritonsillar abscess. The members of this group are characterized by their hemolytic action, their ability to ferment salicin, their negative reaction to raffinose, mannite and inulin, and their insolubility in bile. Cultures 6*b*, 12*a*, and 14 may properly be included in this group although they exhibit a slight variation in their ability to attack dextrose, and also Culture 20 which further ferments raffinose. It will be observed that the fermentation reaction of all the members of this group agree with those of the pyogenes type of streptococci. That the infecting organism in this epidemic was the *Streptococcus pyogenes* is confirmed by the pathogenicity for rabbits, of the members of this group.

Group B.—The other organisms charted show such varying characters as would be exhibited by the streptococci normally present in the upper respiratory tract.

To secure the causal agent directly from the milk when the source of infection cannot be traced to one of the animals in the herd is an almost insurmountable task, and one is thus compelled to rely solely on circumstantial evidence. That circumstantial evidence may prove fallacious has been emphasized by many writers, but from the facts correlated in the present

TABLE SHOWING BACTERIOLOGIC STUDY OF CASES OF EPIDEMIC SORE THROAT

Case No.	Hemolysis	Salicin	Raffinose	Mannite	Inulin	Dextrin	Dextrose	Saccharose	Litmus Milk	Bile	Remarks
GROUP A—											
1.....	+	+	−	−	−	−	+	+	+	−	Rabbit, 750 gm., died. Multiple arthritis and empyema. 1 c.c. eighteen-hour broth culture.
2b.....	+	+	−	−	−	−	+	+	+	−	
3a.....	+	+	−	−	−	−	+	+	+	−	
4.....	+	+	−	−	−	−	+	+	+	−	
5a.....	+	+	−	−	−	−	+	+	+	−	
15.....	+	+	−	−	−	−	+	+	+	−	
16.....	+	+	−	−	−	−	+	+	+	−	
17.....	+	+	−	−	−	−	+	+	+	−	
18*.....	+	+	−	−	−	−	+	+	+	−	Rabbit, 700 gm., died. General septicemia. 1 c.c. eighteen-hour broth culture.
19.....	+	+	−	−	−	−	+	+	+	−	
22.....	+	+	−	−	−	−	+	+	+	−	
24a.....	+	+	−	−	−	−	+	+	+	−	Blood culture negative.
24b.....	+	+	−	−	−	−	+	+	+	−	
6b.....	+	+	−	−	−	+	+	+	+	−	
12a.....	+	+	−	−	−	+	+	+	+	−	
14.....	+	+	−	−	−	+	+	+	+	−	Blood culture negative.
20.....	+	+	+	−	−	+	+	+	+	−	Blood culture negative.
GROUP B—											
9.....	+	+	+	−	+	−	+	+	+	−	
23.....	+	+	−	−	+	−	+	+	+	−	
21a.....	†	+	+	−	+	−	+	−	+	−	
7.....	†	+	+	−	+	+	+	+	+	−	
11.....	†	+	−	+	+	−	+	+	+	−	
13.....	†	−	+	−	−	−	−	−	−	−	

*Culture obtained at farm. † Methemoglobin.

instance, evidence closely bordering on certainty points to the milk as the distributing agent.

The frequency of associated throat inflammation in pulmonary tuberculosis makes a diagnosis of a mild intercurrent tonsillitis particularly difficult. Of the cases, 29 per cent. exhibited only slight tonsillar and pillar injection with or without glandular involvement in the submaxillary and the cervical regions. The constitutional symptoms were uniformly mild in character. Great care was exercised to include in this group only the patients who, previous to the onset of the epidemic, had not complained of local throat inflammation, and who requested treatment for the condition at the time of the epidemic. Certainly 71 per cent. of all cases showed definite local and constitutional disturbances. The tonsils were enlarged, the mucosa swollen and injected. A discrete exudate appeared in 62 per cent. Confluent exudates were not observed. Extension of the inflammatory process to the pillars occurred in 91 per cent.; involvement of the uvula in 73 per cent., and of the pharynx in 93 per cent. Varying degrees of glandular involvement at the angle of the jaw were noted in all cases. In children the glandular enlargement was uniformly more marked. The degree of enlargement, however, was not comparable to that described by Hamburger[7] in the Baltimore epidemic in which the little ones looked like victims of Hodgkins' disease. No apparent enlargement of the liver or spleen was noted. Abdominal pain occurred in some instances, but without subsequent development of peritonitis. Tonsillar abscess developed in two cases during convalescence. From one the causal streptococcus of the epidemic was isolated. Unfortunately, no culture was made from the second case. The constitutional symptoms were those of ordinary follicular tonsillitis: the onset was ushered in by malaise, headache, chilly sensations, and nausea. Severe vomiting occurred in some of the cases. Except in a few cases, the temperature elevation did not exceed 102 F. In some instances, the entire course of the disease was marked by a subfebrile temperature. In three cases, the height of the fever was associated with severe constitutional disturbance and a moderate leukocytosis, which suggested the possibility of a general septicemia. Blood cultures were made to determine this point, but the results were negative in each instance.

It has long been recognized that intercurrent infections occurring in the course of pulmonary tuberculosis may exercise a detrimental influence on the lung lesion. In view of this fact, a comparative clinical study was made to determine the effect of this transient streptococcus infection on the progress of the disease. It was thought that an interval of one month, following the termination of the epidemic, would suffice for the complete subsidence of the local and constitutional disturbance arising from the tonsillar infection. If a critical study of the symptoms and physical findings now showed obvious change when compared with the examination just preceding the epidemic, it might appear reasonable to assume that the cause lay in an exacerbation of the tuberculous lesion, resulting from the transient throat infection. The data obtained proved highly interesting. The distribution of the epidemic did not appear to be influenced by the stage of the pulmonary disease. Except in some instances, to be detailed later, it may be said that in the afebrile cases, with the disappearance of the local throat inflammation the fever promptly returned to normal, and in those previously exhibiting fever, no tendency to assume higher limits was observed.

The determination of the loss of weight was complicated by an outbreak of severe gastro-intestinal toxemia, with diarrhea, involving 53 per cent. of the patient population. As this followed directely after the sterilization of the milk, we tentatively associated the outbreak with the milk. The average loss of weight, excluding those with intestinal complications, was 5½ pounds. The largest reported loss was 12 pounds. These figures were obtained immediately after the close of the infection, and it was interesting to note that after a lapse of one month, in practically every case, the lost weight was regained. In all patients, malaise persisted for varying intervals, and manifested itself in a disinclination for exercise, and weakness, and was frequently accompanied by pain localized as a rule in the thorax, although pain in the joints was also noted. Anorexia ceased with the termination of the throat inflammation. The rapid gain in weight indicated that the temporary loss of appetite was quickly restored to normal. Cough was necessarily accentuated and the amount of sputum, increased during the height of the infection, gradually, with few exceptions, subsided to the usual quantity. Twenty-four hour specimens of sputum were collected to determine any observable changes in the character and quantity, and any increase in the number of tubercle bacilli in the positive cases or their presence in those previously negative. No change occurred in the latter and no observations sufficiently outspoken to be worthy of note were observed in the former. In three cases suffering from tuberculous involvement of the larynx, one with marked infiltration and ulceration showed no untoward effects locally. The enlarged glands at the angle of the jaw had in every instance subsided at the time of the examination. The frequent occurrence of cardiac complications in acute throat affections made us especially attentive to this condition, but, probably due to the mild general character of the infection, no lesions were discovered. One case of mitral regurgitation showed no ill effects as a result of the infection.

A brief summary has been made of six cases in which the clinical course of the tuberculosis was apparently detrimentally influenced as a result of the throat infection. One non-tuberculous patient developed a peritonsillar abscess complicated by a mild attack of arthritis and pleurisy.

SUMMARY OF CASES

Case 2787, Stage 2.—Sputum blood tinged during convalescence, extensive fresh pleural involvement at left base with localized pain, no exudate. Lumbago, general malaise, weakness. Three pounds under former weight. No rise of temperature.

Case 2243, Stage 2.—Malaise, weakness, pain over seat of lesion dating from tonsillar infection, extension of lesion with increased moisture.

Case 3026, Stage 1.—Signs increased, slight extension of inflammatory process. Pain right base with fresh pleural involvement. Constitutional symptoms aggravated.

Miss E., Non-Tuberculous.—Pain right shoulder and corresponding knee, left base pleurisy with accompanying pain, tonsillar abscess; convalescence protracted. Two months later, reexamined, recovered. Evidence of base pleurisy still exists.

7. Hamburger, Louis P.: An Epidemic of Septic Sore Throat in Baltimore and Its Relation to a Milk Supply, THE JOURNAL A. M. A., April 15, 1911, p. 1109.

Case 2364, Stage 1.—Fresh pleural involvement, left base; no pain; no increase of either local or constitutional symptoms.

Miss G., Employee, Stage 1 Plus.—Formerly a patient. Eight months previous to tonsillitis, entire absence of cough and expectoration, now complains of general malaise. Pain in left knee joint. Weakness, dry hacking cough with expectoration, 10 to 15 c.c. in twenty-four hours. Tubercle bacilli absent. No extension of lesion. Increased moisture and right base pleurisy.

To interpret slight variations in the physical findings of tuberculous patients as evidence of increased focal disturbance, may lead to error, unless such changes are accompanied by an increase of the constitutional symptoms. In reviewing the cases cited above, the relative frequency of pleural involvement is a striking characteristic, and although no temperature rise was noted at the time of the examination, there no doubt occurred at the onset of the pleurisy some temperature oscillation which failed to be recorded.

The susceptibility of serous membranes in the presence of acute tonsillar infection has been frequently emphasized. The apparent predisposition of the pleura in the present epidemic may be due, in part at least, to a lowering of the original resistance of this tissue as a result of the existing tuberculosis.

Milk borne epidemic sore throat, as reported by English authors and in most of the epidemics occurring in this country, is a severe disorder followed by serious complications and having a relatively high mortality. In striking contrast to this picture is the present epidemic, which was characterized by a mild form of infection with few resulting complications and no mortality. Notwithstanding the mild nature of the infection, the evidence would seem to sustain the supposition that acute inflammatory throat conditions are especially to be avoided in pulmonary tuberculosis, since their presence may exert a decidedly harmful influence on the pulmonary lesion.

THE PREPARATION OF DIABETIC PATIENTS FOR OPERATION

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There are three dangers which are commonly accepted as accompanying operations on diabetic patients—wound infection, non-healing, and diabetic coma. The method of preparation for operation still frequently followed is the removal of sugar and starches from the food. The theoretic basis of this treatment is the conception that the slowness of healing of the operation wound and its liability to infection are to be ascribed to the direct action of the excessive amount of sugar in the blood and tissues, and that diabetic coma is especially likely to occur in those patients in whom the diabetic condition, as judged by the amount of sugar excretion, is especially pronounced. An endeavor is therefore made to get rid of the hyperglycemia before operation, and the patient is given a carbohydrate-free diet until the sugar in the urine is eliminated or has been greatly reduced in amount.

This method of preparation does not attain its object. Unfortunately it is not simply ineffectual, it is positively disastrous in its results. It is the best way possible to subject the patient to the maximum degree of risk. Yet the theory on which it is based seems plausible enough; indeed it is the first obvious hypothesis which anyone could probably make. This is, as a matter of fact, exactly what it is. It is a pure hypothesis, unsupported by any experimental work. Investigators have long ago put it to the test and found it wanting. They have published their results in technical journals, and have gone on to make other hypotheses and other experiments. In the meantime many clinicians, concerned more with practice than with theory, continue to act on the not unnatural assumption that since a reduction of the amount of carbohydrate in the food is one of the standard principles of treatment in diabetes, it is all the more necessary to carry it out rigorously as a preparation for operation, when the patient is going to be in danger according to the intensity and the grade of the diabetic condition from which he suffers.

Clinical and experimental research work not infrequently clears up the theory of a disease, but does little for its treatment. In diabetes the reverse has been the case, for the mystery of the origin of the condition is still substantially intact, while a great deal of knowledge has been gained which is of importance in the actual management of patients. This question of the best way to prepare such a patient for operation is an excellent example of that fact.

A special liability to infection exists in diabetes. Clinical experience shows it, and experimental research confirms it. It is therefore one of the dangers of operation. Are there any steps which can be taken to guard against it? The answer depends on whether we can remove the cause of the decreased resistance of the tissues. If it is the increased sugar in the blood, we can do a great deal toward removing it. It is certain, however, that the sugar in itself has nothing to do with it. An animal may be made intensely hyperglycemic and yet show no increased liability to infection; but when the hyperglycemia is due to the removal of the pancreas, this liability shows itself. Both may be effects of the same cause, but they have no direct relation to one another. By cutting off carbohydrate food, many diabetic patients will become free from sugar in the urine, but there is just as much chance of infection then as when the urine and tissues are loaded with sugar. The fact must simply be accepted that we have not, as yet, any specific means of dealing with this danger. That will not deter a surgeon from operating. There will be no infection in operating on aseptic tissues, however low their resistance may be, so long as organisms are not allowed to enter, and even when absolute asepsis cannot be attained, it is not a common experience to find that dangerous wound infections follow.

As regards the second danger—non-healing of the wound—there would seem to be even less to fear. It is even a little doubtful whether the diabetic condition in itself has anything which has any deterrent influence on the process of healing in an aseptic wound. Everyone is familiar with the type of diabetic patient whose most prominent symptom is progressive loss of weight. It is in these cases that, associated with more or less marked inability to assimilate dextrose, there may also be an analogous though less pronounced disturbance in the utilization of amino-acids, which are found in somewhat increased amounts in the urine. Here, again, there is no direct relationship between the amount of sugar in the urine and this interference with protein metabolism. Many persons who have constantly from

4 to 5 per cent. of sugar maintain their weight for years, while others, with perhaps a less marked inability to utilize sugar, waste rapidly. It is in these cachectic cases, perhaps, that there may be some possibility of delayed healing, but whether this is to be ascribed to some unknown concomitant of the diabetic condition, or is simply part and parcel of the cachectic state, it is impossible to say. In two of the six cases we have seen recently there was well-marked cachexia and yet the wounds healed rapidly. This seems to be the common experience, and this danger, if it exists, is a minor one. At any rate, there is no evidence that it has any connection with the degree of hyperglycemia.

The last danger—diabetic coma—is the only one of any importance. Karewski stated last year that he had notes of 136 cases of operations on diabetics. There was a mortality of 20 per cent., and, of these, 78 per cent. died in coma and only 21 per cent. from all other conditions.

Diabetic coma is a definite clinical entity. We know that the cause is a poisoning with large quantities of beta-oxybutyric and diacetic acids; and we can only diagnose the condition with certainty when we have demonstrated the presence of large amounts of these substances in the urine. It is true that we need expect no very close relationship between the actual amounts of these acids recovered from the urine and the severity of the patient's condition; for, as has been pointed out, it is the amount retained in the tissues, and not that part which the body succeeds in excreting, which does the damage, and, further, we have to take into account varying susceptibility, not only in different patients, but also in the same person at different times. Yet it remains true that we cannot say a patient has diabetic coma unless we find at least considerable amounts of beta-oxybutyric and diacetic acid, and (if no large amount of alkali has been given) a considerably increased total quantity of ammonia in the urine. The clinical symptom of air hunger cannot be regarded as indispensable for the diagnosis, since Wilbur has shown that an analogous condition may be produced by feeding the neutral sodium salt of oxybutyric acid as well as the acid itself. The neutral salt would not of course lead to the slight increase in the H ion concentration of the respiratory center which is supposed to produce this symptom. Blum has also recently reported death in diabetic coma in a patient to whom so much alkali had been given that the urine had remained alkaline throughout, in whom, therefore, no "acidosis" existed. Unless oxybutyric acid or its salts are found in large amount, however, there can be no question of diabetic coma. At present, any patient with diabetes who becomes comatose is apt to be regarded as in diabetic coma. It is rarely possible to make quantitative estimations of acetone bodies, because that requires much time and technical skill, and alkalies have been almost always given, so that ammonia estimations are not decisive. The diagnosis is therefore not checked up. In patients in whom the typical deep breathing is well marked, the diagnosis is nearly always well grounded, but it is not unlikely that in the less typical cases there are some in whom the coma is due to something else than oxybutyrates or diacetates. We have recently seen, in this clinic, two diabetic patients die in coma with somewhat deep breathing but without the typical polypnea, in whose urine there was no large amount of acetone bodies or ammonia. They died in coma, but not in diabetic coma. Karewski does not give details in connection with his cases of coma following operation, but surgeons who have seen a number of cases state that, in a certain proportion, the coma is not by any means clinically typical. Exact estimations of the quantity of acetone bodies in the urine and in the blood and tissues are necessary in such cases in order to establish definitely that they are not true diabetic coma. We do not as yet have such estimations, but it would seem probable that there is a form of death in coma which is caused by something else than poisoning with acids.

For this reason one cannot say that true diabetic coma is the only special danger after operation on diabetics. There may well be something else to fear about which we know nothing. True diabetic coma is, nevertheless, certainly not uncommon after operation. It is the only known danger of any account which arises after operation as a direct result of the diabetic condition. From a practical point of view it is this we have to guard against.

Have we any means by which we can say in what patients diabetic coma would be especially apt to appear after operation? It is natural to suppose that in severe cases it would more commonly appear than in mild ones. Karewski states, however, that nearly 50 per cent. of his cases of coma were in patients classified as having mild diabetes. This division into severe and mild cases is one which is based on one manifestation of the condition, that is, the amount of sugar excreted in the urine. If under dietetic restrictions the patient becomes sugar-free, he is said to have "mild" diabetes, if not, it is a case of "severe" diabetes. We must conclude, then, that the amount of sugar in the urine is no indication of the degree of danger. This, after all, is not so surprising, for it is not the loss of power to use sugar which produces diabetic coma, but the loss of power to oxidize beta-oxybutyric acid to carbon dioxid and water. It is the common clinical experience that in many cases there is no close parallelism between the disturbance of carbohydrate and fat metabolism. Patients who are difficult or impossible to render sugar-free may have very little difficulty in dealing with fatty acids, while other patients who have only a moderate amount of sugar in the urine, may have a relatively large output of acetone bodies.

If, then, we turn our attention to the fat metabolism, and put all the patients concerning whom the question of operation had been raised, under the same conditions as regards diet, would it be possible from the relative amounts of acetone bodies to tell the relative danger these patients would run? Is a patient who excretes 10 gm. of acetone bodies in twice as much danger as one who under the same conditions excretes only 5 gm.?

We know that this is by no means always the case. Patients are seen who over long periods of time lose large quantities of fatty acids, as much as 25 gm. daily, who yet do not develop diabetic coma. On the other hand, it may appear unexpectedly in those who excrete relatively small amounts of acetone bodies. There is quite commonly this element of surprise in the onset of the condition, as if the neutrality regulating mechanism of the body were overwhelmed by a sharp and complete failure to oxidize the fatty acids; as if the hidden factors of safety, working more or less efficiently in spite of difficulties, had suddenly given way under some added strain. Although, from the amount of acetone bodies alone, we cannot pick out those patients who are thus on the verge of diabetic coma, if with this we could combine observations on

the rate of increase of acetone body excretion, following an increase in the total amount of fatty acids undergoing oxidation, we should probably get nearer to the crux of the question, for this would be equivalent to a functional test of the integrity of the fatty acid oxidizing mechanism under strain.

We have a method which is easily applied, of throwing a strain on the capacity of the organism to oxidize fatty acids. When carbohydrates and proteins are removed from the food, the fats are mobilized to provide nourishment for the body. The quantity of beta-oxybutyric acid produced is greatly increased. According to the capacity of the body this will be oxidized to carbon dioxid and water or will be excreted unchanged.

With this idea in mind, we have recently put diabetic patients, concerning whom the question of operation has arisen, for three days on a diet which contains 100 gm. of carbohydrates, 80 gm. of protein, and 150 gm. of fat. At the end of this period of moderate carbohydrate and protein intake, they are under approximately the same conditions, and their relative excretion of acetone bodies may be compared.

During the next three days an abrupt change is made in the diet. The carbohydrates are reduced to 18 gm., and the proteins to 27 gm. By giving 200 gm. of fat and some alcohol, the caloric value of the diet is made as high as possible. The patient of course is kept absolutely at rest in bed.

In some patients who have shown a high excretion of acetone bodies even during the period of moderate carbohydrate intake, it may be safer to give alkali to facilitate the excretion of the increased amounts of acetone bodies which this cutting off of carbohydrates and proteins will produce, and, in such cases, the estimations of the ammonia content of the urine will indicate a slighter degree of acidosis than really exists. Then we have to rely on such clinical approximations to the total quantity of acetone bodies as are given by Hart's method, when, as is usually the case, we have no facilities for more accurate estimations. This is seldom a serious handicap, since stress is laid not so much on the absolute degree of acidosis as on the rate at which it augments under the above conditions. The excretion of acetone bodies is always increased, but the important point is the relation between the amount excreted on the last day of the second period and the end of the first.

We have not had sufficient experience with this method to allow us to give any definite ratio between the ammonia or acetone body excretion of these two periods, which should be regarded as indicating a special liability to the onset of diabetic coma, and indeed it is evident that no hard and fast rules can be laid down. The absolute amounts as well as the relative increase must be borne in mind. A large relative increase in a patient who was excreting very little acetone bodies will not have the same significance as a similar increase when the previous elimination was high.

Both factors have to be taken into account in forming a judgment, but, of the two, the greater stress should probably be laid on the results of the functional test. After a considerable number of cases have been studied along these lines, it will be possible to formulate more precisely the significance of the results as regards prognosis. We intend to continue this work, for there is an obvious need for a functional test to indicate not only the extent of the deficiency in the fatty acid metabolism in diabetes, but also its stability or instability under strain.

It is, of course, only in those cases of diabetes in which operation may be safely delayed and possibly avoided altogether that it is wise to put the patient through this test. When there is any septic condition (a spreading moist gangrene for instance), the statistics which have been collected show that the earlier the operation the lower is the mortality. No time should be wasted in trying to estimate the risk of such an unavoidable operation, when with every day the danger increases.

If an operation is decided on or is imperative from the nature of the case, how can the patient be prepared against the danger of diabetic coma? When time is not all-important, the obvious indication is to endeavor to bring about a storage of carbohydrate in the liver in the form of glycogen. Even in the most severe disturbances of the power to utilize sugar, the capacity is not entirely lost, since even in these patients we can almost always reduce more or less the degree of acidosis by feeding carbohydrates. It is a mistake to wait until the condition of diabetic coma is evident before carbohydrates are given, for then it may be too late and the damage already done. When the organism is under strain and mobilizes its food reserves, glycogen is the first line of defense. It is only when the store is becoming exhausted that the fats are called on. Glycogen spares fat. The less fat is broken down, the less acetone bodies will be produced.

The *accumulation of glycogen* in the body is the aim. The best means to attain it in most cases is to feed *oatmeal.* This was discovered accidentally by von Noorden. Allen gives the best explanation why this particular form of carbohydrate should be better borne than others. He points out that oatmeal calls for a minimum secretory activity on the part of the pancreas, and brings forward interesting evidence in favor of the view that there is a relationship between the external and internal secretion of the pancreas.

Success in producing a retention of carbohydrates with the oatmeal diet is much more likely to be attained if it has been preceded by a period of nearly complete rest to the carbohydrate regulating mechanism of the body. The fat-alcohol diet, which has been suggested as a means of testing the integrity of the mechanisms concerned in the complete combustion of fatty acids, at the same time serves as the best preparation for the oatmeal, for it contains only 18 gm. of carbohydrates and 27 of protein. Assuming that the greatest conceivable amount of sugar is formed from the protein, the total sugar which could be produced only amounts to about 40 gm. Under these conditions the diabetic organism seems to store up within itself some substance necessary for the fixation and utilization of sugar. When larger quantities of carbohydrates or protein are ingested, the amount of this hypothetic substance is not only insufficient, but the organ or organs concerned in its production are so overstrained that the amount turned out is actually smaller. At any rate, whether or not this is the explanation, it is a well-established clinical fact that after a period of sugar starvation, the amount of carbohydrate which is retained in the body is, in the great majority of cases, much larger than it was before. It is a mistake to have any standard quantity of oatmeal to give all patients, because there are some who, if you give them 150 gm. of carbohydrate in this form, retain more than if you make them take 300 gm. Digestive disturbances must

be carefully watched for. It appears that they seldom occur, but if they do, all the good which may have been acquired is probably lost, and the operation will have to be delayed until the patient has fully recovered.[1]

During this period of oatmeal feeding, the sugar in the urine will greatly increase or may reappear if the patient has become sugar-free under the fat-alcohol diet. The amount should be estimated and compared with the sugar-value of the diet in order to determine how much is retained; but apart from this no attention should be paid to it. The fact that the patient has a high sugar concentration in his blood and urine is not in itself any contra-indication to operation.

Another essential part of the preparation is to have the patient in the best possible condition to excrete large amounts of the acetone bodies, if they should be produced during or after the operation.

When alkali is given to a diabetic patient with acidosis, the effect is almost always a marked increase in the acetone bodies in the urine, an increase which may extend over several days; but alkali in itself has no influence on the production of these incompletely oxidized acids. It can neither increase nor decrease the actual amount formed. All it can do is to turn them into a form in which they can be readily gotten rid of. Even in comparatively mild acidosis an increased excretion after the giving of sodium bicarbonate may be observed. This would seem to be a significant fact. It would indicate that, from the beginning, there is the tendency to that heaping up of oxybutyrates and diacetates in the tissues, which, when it reaches a certain grade, culminates in the condition we know as diabetic coma. We do not know the reason for this difficulty in excretion. Probably, in the tissues, oxybutyric and diacetic acid exist largely in the form of ammonium salts, since the store of free fixed bases in the body is limited and is required for other purposes, whereas there is an unlimited potential reservoir of ammonia. Perhaps the ammonium salts are in some way held in the tissues, or it may be that the kidneys can more readily excrete the sodium than the ammonium salts. Investigations along these lines are badly needed. There is no doubt, however, about the practical indication. If possible, no patient should be operated on until he has been oversaturated with fixed bases, that is to say, until such an excess has been given that the urine is distinctly alkaline. Then we may be sure that all the retained acetone bodies have been washed out.

On theoretic grounds we ought to give a mixture of various bases, sodium, potassium, calcium, and magnesium, since the available stock of each of these minerals may be depleted in a patient with acidosis. Sodium bicarbonate, however, remains the alkali which can be taken in the largest quantities, and very large quantities are sometimes required before the urine becomes alkaline. It is best to give the alkali half an hour before each two- or three-hourly feeding with oatmeal. Doses of from 5 to 10 gm. in plenty of water may be necessary, and one or two doses should be given at night, if it can be done without disturbing the patient. The quantity of alkali required to make the urine alkaline is an indication of the amount of acetone bodies stored in the body, and this is another point to be considered in prognosis.

1. Perhaps the caramel introduced lately by von Grafe will be found to be even a better substance than oatmeal for producing an accumulation of glycogen in the liver. When dextrose is heated to a temperature of 200 F. for half an hour, it becomes polymerized to substances of high molecular weight, and has been found to be very well assimilated by diabetics.

When by these means we have succeeded in causing some storage of glycogen, and have saturated the body with alkali, there is no doubt that the patient is in better condition for operation and is less likely to die of diabetic coma than he would have been under the old plan of carbohydrate starvation. It is well to remember, however, that these are only palliative measures, and do not influence the cause of the condition. Diabetic coma still appears in spite of these precautions. They are only frail barriers, which a suddenly rising tide of acetone bodies may easily sweep aside. We have not even begun to work out the best method of preventing this catastrophe until we go to the root of the matter and find the ultimate cause. There are many difficulties in the way of such studies. It has not been approached from the experimental side, because nothing quite analogous to diabetic coma can be produced in dogs, though it is to be hoped it may be found possible in monkeys. In man, of course, treatment must supersede investigation.

In the absence of the fundamental knowledge necessary for any specific treatment, the best that can be done is to look for factors which may act as exciting causes.

Why is the incidence of coma so enormously higher in diabetics who are operated on than in those who are not? It cannot be the amount of tissue trauma alone, for coma is common after minor operations. It is not the anesthetic, for it may appear when local anesthesia or no anesthetic is used; it is not after any special sort of general anesthetic, for it occurs after all. As has been mentioned, about 50 per cent. of the deaths in coma after operation are in patients in whom the defect in the carbohydrate metabolism is not very pronounced. Even the degree of disorganization of the fatty metabolism cannot be taken as a safe guide, though it is the best we have. There seems to be a something incalculable and mysterious which may upset prognosis, however carefully the evidence is balanced.

What is there common to all operations which can vary in its intensity this bizarre manner, which may be severe after a slight operation, and negligible after an extensive one? Shock, if that word is taken in its widest significance, is the only condition which may so act. The extent of the psychic and physical alterations induced by operation cannot be predicted in any patient, since it depends not only on the objective trauma, but also on the subjective receptivity of the nerve centers. The mental attitude of the patient can be only vaguely guessed, yet this factor may be of primary importance. One man may put his hand in the fire and suffer no shock, while another may die from the stress and turmoil induced by apprehension, before the knife has touched him.

In diabetes we have good reason to believe that bodily or mental disturbances may induce marked variations in the metabolism of carbohydrates and fats. It is an old clinical observation that diabetic coma may follow physical or psychic trauma. A patient breaks his arm or receives some bad news, and a few days later dies in coma, and it is worth noting that some modern investigators are returning to the conception that the origin of diabetes is to be sought for in a functional derangement of the nervous system.

Whether or not this is so, the practical indication is plain. We must regard all diabetic patients, and more especially those in whom a marked instability of the fatty acid oxidizing function has been demonstrated,

as being, as it were, on the edge of a precipice. They are maintaining their equilibrium with difficulty, and it is of vital importance that they should not be distracted.

We have in our hands the means whereby the strain on mind and body of any operation may be greatly reduced. Crile has worked out the details in connection with operations on patients with exophthalmic goiter. If the measures grouped under the term "anoci association" could be applied to all diabetics in whom operation was necessary, it seems not unlikely that the present high mortality from coma would be greatly reduced.

SUMMARY

1. One method of preparing diabetic patients for operation is to give them a sugar and starch-free diet. This is a useless procedure, because, although it may reduce the degree of hyperglycemia and the amount of sugar in the urine, it will not lessen any of the risks of operation. It is more than useless, however; it is dangerous, since it increases the chances of the onset of diabetic coma.

2. When operation is not immediately necessary, and especially in those cases in which the decision as to whether or not an operation shall be performed rests largely on the question as to how much danger would be run by the patient after the operation because of his diabetic condition, it would be a great advantage to have some objective data to supplement the facts relative to this point, which can be gained by clinical observation. The quantity of sugar in the urine is no aid in this respect, for the special danger to life is the failure, not of the sugar, but of the fatty acid metabolism. The coma in which diabetic patients die after operation is, often at least, accompanied by the excretion in the urine of large amounts of unoxidized fatty acids, and there is good reason for believing that the condition is due to poisoning by these acids.

The estimation of the degree of impairment of the power of the body to oxidize fatty acids is therefore of prime importance in deciding whether or not operation is advisable in any particular case; but the amount of acetone bodies (fatty acids) excreted does not give a reliable indication of the degree of danger, because, although that amount may be small, the reserve power of the body to deal with these substances may be very slight, so that there may be a sudden failure under the special strain induced by operation, with the result that diabetic coma ensues. What is needed is a functional test of the fatty acid oxidizing power. A method is outlined whereby, with very simple methods, the amount of acetone bodies or of ammonia under certain fixed conditions is compared with the quantity found under circumstances which call for a marked increase in the catabolism of fatty acids.

3. The fear, excitement and undernourishment of the patient, which frequently accompany operation, brings about a call for the utilization of the food stored in the body. This food consists of glycogen and fat, but the most easily available is glycogen, and there will be no very extensive breaking down of fat into fatty acids until the glycogen stores of the body are largely depleted. Even in cases in which the utilization of sugar is very defective, glycogen will diminish the amount of fat required in such emergencies. One aim of treatment should therefore be to bring about a storage of glycogen in the body before operation. The best means yet devised to this end is the oatmeal treatment introduced by von Noorden.

4. The inability of the kidneys to excrete large amounts of fatty acids is a factor in the production of diabetic coma. The giving of alkali helps the kidneys in this work. Before operation, therefore, it is important to give alkali until the urine becomes alkaline, and to maintain if possible this alkaline reaction after operation.

5. Neither success in inducing a storage of glycogen in the body before operation, nor in keeping the urine alkaline is an absolute barrier against diabetic coma. They are only palliative measures. All those circumstances which unite together to produce shock are factors which act as exciting causes of the condition known as diabetic coma. It is possible to mitigate the action of these agencies by the application of the principles of "anoci association."

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RESULTS OF COMPLEMENT-FIXATION STUDIES WITH THE CORYNEBACTERIUM HODGKINI*

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Fraenkel and Much,[1] in 1910, described an organism occurring in Hodgkin's disease. This bacterium, Gram-positive, granular, non-acid fast and sodium hypochlorid (antiformin) resistant was seen in the lymph nodes of twelve out of thirteen cases, but no satisfactory culture was obtained. Negri and Mieremet,[2] in 1913, successfully cultivated this organism from two cases of the disease. They applied the name *Corynebacterium granulomatis maligni* to the bacillus on account of its diphtheroid nature. In the two cases studied, complement fixation was tried, but the results were negative. No methods were described in their article. In the same year Bunting and Yates[3] obtained pure cultures in four out of seven cases of Hodgkin's disease and renamed the organism *Corynebacterium hodgkini,* which being binomial, is a more suitable name.

Billings and Rosenow[4] obtained pure cultures of this diphtheroid bacillus from the glands of patients suffering from Hodgkin's disease, and in one case in which the lesion was of the lymphosarcoma type. Subsequently, Steele[5] reported the finding of the same diphtheroid organism in a case of Hodgkin's disease as well as in a case of lymphatic leukemia. Recently Yates, Bunting and Kristjanson[6] have found a similar organism in Banti's disease.[7]

Without going into the question of whether or not this bacillus is the causative factor of Hodgkin's disease, lymphosarcoma, lymphatic leukemia and Banti's

* Work done under the tenure of the Eugene Meyer, Jr., Fellowship in Pathology, Pathological Laboratory, Mount Sinai Hospital, New York City.

1. Fraenkel and Much: Ztschr. f. Hyg., 1910, lxvii, 159.
2. Negri and Mieremet: Centralbl. f. Bakteriol., 1913, lxviii, 292.
3. Bunting and Yates: Cultural Results in Hodgkin's Disease, Arch. Int. Med., August, 1913, p. 236; An Etiologic Study of Hodgkin's Disease, THE JOURNAL A. M. A., Nov. 15, 1913, p. 1803.
4. Billings, Frank, and Rosenow, E. C.: The Etiology and Vaccine Treatment of Hodgkin's Disease, THE JOURNAL A. M. A., Dec. 13, 1913, p. 2122.
5. Steele, A. E.: Corynebacterium Hodgkini in Lymphatic Leukemia and Hodgkin's Disease, Boston Med. and Surg. Jour., Jan. 22, 1914.
6. Yates, J. L.; Bunting, C. H., and Kristjanson, H. T.: The Etiology of Splenic Anemia or Banti's Disease, THE JOURNAL A. M. A., Dec. 19, 1914, p. 2224.
7. Kusunoki (Virchows Arch. f. path. Anat., 1914, ccv, 184) found this diphtheroid in sixteen cases of Hodgkin's disease. The article contains a complete bibliography.

disease, I shall state my experience with it in regard to complement fixation with patients' serums. Incidentally, comparative studies were made between it and other diphtheroids.

The methods of procedure were as follows:

The Antigen.—A polyvalent antigen was prepared using three strains of the organism, two of which were obtained through the courtesy of Dr. Rosenow, and one was cultivated by Dr. Celler, from the glands of a patient suffering from pseudoleukemia. At the same time, for the sake of comparison, individual or single strain antigens were prepared from each of the three. The organisms were grown for twenty-four hours on 0.5 per cent. glucose-serum-agar in Blake bottles. The growth was usually luxuriant, so that 10 c.c. of sterile distilled water were sufficient to wash off the growth from each Blake bottle. The suspension was autolyzed at 60 C. (140 F.) for one hour, and then kept at 37 C. (98.6 F.) for twenty-four hours. This thick fluid was then filtered through a size N Berkefeld filter at the rate of from 3 to 4 drops per minute. The resultant clear fluid was heated at 56 C. (132.8 F.) for one-half hour on each of three consecutive days, but no preservative was added. For comparison, antigens of unfiltered suspensions of the organism were used, but these were so anticomplimentary and non-antigenic that they were discarded.

Immune Serum.—To test the antigenic properties of the antigens, immune rabbits' serums were prepared. A saline suspension of growth of the organism on one agar slant was injected intravenously; four days later two agar slants, followed in four days by three agar slants and at the same interval by four slants. This organism being completely avirulent for rabbits, these large doses could be given with impunity.

Nine days after the last injection, the rabbits were bled. All the rabbits were tested previous to immunization and those that would bind complement in high dilutions in the presence of antigen were discarded. It is to be remembered that most rabbits' serums will bind complement in the presence of a bacterial antigen when used in amounts of 0.1 c.c. or more.

In this manner, immune serums were developed against the three strains as well as against each single strain.

Patients' Serum.—This serum was inactivated at 56 C. for one-half hour.

Complement and Hemolytic System.—Guinea pig serum 1:10 was used for complement. Rabbit antisheep red blood cell amboceptor and sheep cells in a 5 per cent. suspension were employed. These reagents were carefully titrated before use. In general, Wassermann's technic (but half his quantities) was followed, and twenty-four hour ice-box fixation allowed before the hemolytic system was added. An active hemolytic system is essential in order to obtain clear-cut results in all bacterial antigen work.

Titrations.—Using these reagents, the antigens were first titrated for their anticomplementary unit, after being "normalized" to 0.85 per cent. tonicity. The amounts used never exceeded one-fourth the anticomplementary titers, to avoid the danger of non-specific fixation. The antigenic powers of the antigens were determined by titrating this amount against decreasing amounts of immune rabbits' serums. In this way antigens having a long "range" were used with patients' serums. For example, an antigen, the anticomplementary dose of which was 0.6 c.c. was employed in amount of 0.15 c.c. This completely inhibited hemolysis with 0.001 c.c. immune serum or one two-hundredth the amount used in test with patients' serums.

Control polyvalent antigens, made of growths of streptococci and gonococci, were employed to eliminate reactions that might be caused by a bacterial antigen as such.

Having obtained highly specific antigens capable of binding complement-fixing antibodies, the following tests were made with patients' serums:

CASE 1.[8]—Histologic diagnosis, Hodgkin's disease. Blood tested one year and three months after onset of symptoms. Vaccines (of this organism) were given after serum examination. The patient died one month after the test.

CASE 2.—Clinical diagnosis, Hodgkin's disease. (The patient refused to have a gland excised for diagnosis.) The blood was tested three months after the onset of the symptoms.

CASE 3.—Histologic diagnosis, Hodgkin's disease. The blood was tested two months after the onset of the symptoms.

CASE 4.—Histologic diagnosis, Hodgkin's disease. The blood was tested two years after the onset of the symptoms.

CASE 5.—Histologic diagnosis, Hodgkin's disease. The blood was tested ten months after the onset of the symptoms. This case was treated with vaccine (of this organism). The patient died two months later.

CASE 6.—Histologic diagnosis, Hodgkin's disease. The blood was tested between five and six years after the onset of the symptoms.

CASE 7.—Histologic diagnosis uncertain, but a gland showed chronic changes resembling Hodgkin's disease. The blood was tested one year after the onset of the symptoms.

CASE 8.—Histologic diagnosis, lymphosarcoma. The blood was tested two months after the onset of the symptoms.

CASE 9.—Histologic diagnosis, lymphosarcoma. The blood was tested two months after the onset of the symptoms.

CASE 10.—Histologic diagnosis, lymphatic leukemia. The blood was tested three years after the onset of the symptoms.

The serums of these patients were used in amounts varying from 0.05 c.c. to 0.2 c.c. (corresponding to 0.1 c.c. to 0.4 c.c. in Wassermann's system). Ordinarily, the reagents used in this laboratory are gaged so that from 0.05 to 0.1 c.c. gives perfect fixation with other bacterial antigens with specific serums. Using greater amounts of the serum, however, the maximum amount of antigen and longest period for fixation (twenty-four hours, ice-box), the results in these cases were uniformly negative.

At the same time, serums from patients suffering from other chronic conditions, as lues, tuberculosis, pernicious anemia, carcinoma, etc., in all thirty-four, were tested in a similar manner and the results were likewise negative.

An attempt was made to investigate the nature of the *Corynebacterium hodgkini* by making cross-fixation experiments with other diphtheroids.

Rabbits were immunized, as above described, against the xerosis bacillus and Hofmann's bacillus, both pseudodiphtheria organisms. In this work, the preliminary titration (that is, before immunization) of rabbits' serums showed a great tendency on the part of normal rabbits to bind complement with the xerosis bacillus antigen. When such difficulties had been overcome and potent immune serums developed, my protocols (too lengthy for publication here) show that there existed no cross fixation between the xerosis bacillus and the Hofmann bacillus, nor between the Hodgkin's organism and either of the former. Hence the *Corynebacterium hodgkini* is distinct from these pseudodiphtheria organisms.

Mount Sinai Hospital.

8. In all the cases the histologic diagnoses were made by Dr. F. S Mandelbaum, Pathologist, Mt. Sinai Hospital.

Value of Medical Libraries.—It is hard to speak of the value of libraries in terms which would not seem exaggerated. To study the phenomena of disease without books is to sail an uncharted sea, while to study books without patients is not to go to sea at all. For the teacher and worker a great library is indispensable. They must know the world's best work and know it at once: they mint and make current coin, the ore so widely scattered in journals, transactions and monographs.—Osler.

TREATMENT OF HEMORRHOIDS BY THE OPEN METHOD

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CHICAGO

Hemorrhoids are primarily a varicose condition of the hemorrhoidal veins, and their tumor-like structure is due to this varicosity (Fig. 1).

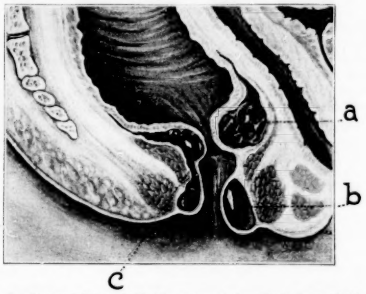

Fig. 1.—Internal hemorrhoid (*a*), external thrombotic hemorrhoid (*b*) and interno-external hemorrhoid (*c*).

They are located on the inner side of—and project into—two similar, hollow, flexible, distensible, collapsible, sensitive and musculovascular cones (Fig. 2). These cones are formed by the coalescence of the hindgut and proctodeum, with their common point of intersection at the pectinate line. One of these is the proximal (or rectal) cone, the other, the distal (or anal) cone. The former is lined with mucous membrane, nourished by the superior hemorrhoidal artery and drained by the superior hemorrhoidal veins. The anal cone is lined with skin, nourished by the inferior hemorrhoidal artery and drained by the inferior hemorrhoidal veins.

Clinically, hemorrhoids should be classified: (1) according to location, (2) according to structure.

1. According to their location they are divided into internal, external and interno-external hemorrhoids.

2. According to their structure they are divided into: (*a*) those containing fluid blood; (*b*) those containing clotted blood; (*c*) those containing both fluid and clotted blood, and (*d*) "skin tabs" or cutaneous folds (Fig. 1).

Internal hemorrhoids are located in the proximal cone, and are due to a varicosed condition of the superior hemorrhoidal vessels. This varicosity is covered by mucosa and submucosa, and contains fluid blood (Fig 1 *a* and Fig. 3).

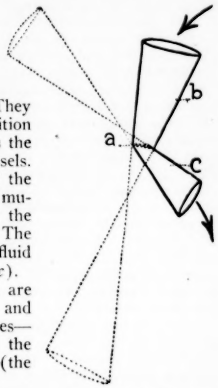

Fig. 2.—Schematic illustration of the anal and rectal cones: *a*, pectinate line; *b*, mucous membrane; *c*, skin.

Interno-external hemorrhoids are located partly within both cones. They are due to a diseased condition of the superior as well as the inferior hemorrhoidal vessels. The proximal portion of the hemorrhoid is covered by mucosa and submucosa and the distal portion by skin. The contents are usually both fluid and clotted blood (Fig. 1 *c*).

The external varieties are located in the anal cone and are divided into two classes—the thrombotic pile and the hypertrophied "skin tab" (the "fleshy pile"). The first of these usually comes on rather suddenly, is bluish-red, very painful, covered by skin and contains a clot of blood (Fig. 1 *b*). The "skin tab," or fleshy pile, is what the name implies. There is no pain unless it becomes irritated and inflamed; then it is very painful.

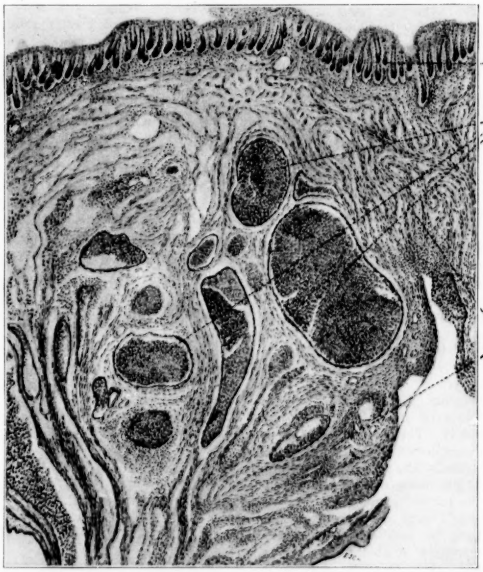

Fig. 3.—Microscopic section of an internal hemorrhoid showing the mucous membrane (*a*) and the blood lakes (*b*) located in the submucosa (*c*).

TREATMENT

Indications for Treatment. — The presence of piles is a justification for their treatment. Hemorrhoids per se may do no harm, but their presence lessens physiologic resistance; while the end-result if they are not treated may be formidable. Treatment is both palliative and operative.

Palliative.—This consists of keeping the bowel movements soft and regular, together with applications of stimulating agents and astringent lotions or ointments.

Operative.—This consists in excising sufficient of the covering of such varicosities so that when the

pathologic condition is removed, the operated field will resume its normal state and relation to the contiguous parts. This, in my opinion, can best be done by that method of operating which radically removes the pathologic condition present, traumatizes the tissues least, gives least pain, keeps the patient from his work

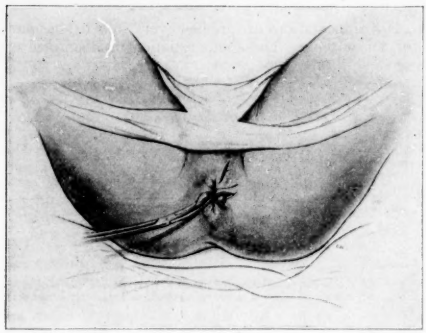

Fig. 4.—Removal of an ellipse from over the clot, the extraction of the clot and the appearance of the cavity after the clot is removed. The scrotal bandage applied. Over draperies have been purposely omitted from Figs. 4, 5 and 7.

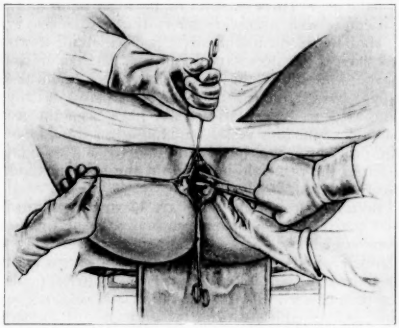

Fig. 5.—Method of bringing the hemorrhoids into view and the removal of an ellipse from one of the tumors. Vis a tergo pressure is being applied with the left index finger.

the shortest period of time, is the safest and freest from danger, and preserves the normal contour and function of the rectum. For want of a better name, I have called this method the open method of operating on hemorrhoids.

ANESTHESIA

Either general or local anesthesia may be used. I operate on 90 per cent. of my cases by blocking[1] the field of operation, and usually employ from one-quarter to one-half grain of cocain in solution, and about 1 to 2 grains of quinin and urea hydrochlorid in the same manner. The cocain is employed in the strength of from 0.25 to 0.5 per cent.; the quinin and urea hydrochlorid in from 0.5 to 1 per cent. solution. Sometimes the two solutions are combined. The cocain is used for its immediate effect and the quinin and urea hydrochlorid for prolonging the anesthesia. (Novocain may be used instead of cocain.)

I usually anesthetize the perianal skin first, and then the muscles and perirectal structures. A puncture being made in the median raphé about one inch posterior to the anus, the needle is carried from this point first around one, and then the other side of the anus, to the anterior median raphé, depositing the solution in its course. The needle is next introduced into the muscles and up along the sides of the rectum, anesthetizing these structures.

For the deeper tissues, the needle is usually inserted into the anterior and posterior median raphé, also in the right and left lateral quadrants, and carried up along the lateral walls of the rectum. (The finger in the rectum may be used as a guide, if the operator so desires.)

During the last twenty years I have given a fair trial to each of a number of methods advocated which promised a good result. These include the ligature, clamp and cautery, Whitehead's, injections, suturing and other plans, and I have come emphatically to the conclusion that the best way of treating this condition is by the open method before referred to.

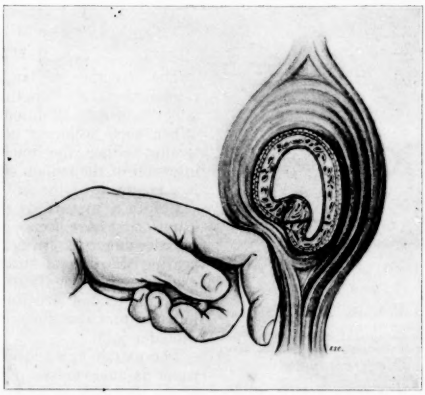

Fig. 6.—Effect of vis a tergo pressure, and line of incision.

PREPARATION OF PATIENT

The perianal region is, as a rule, shaved, and the rectum irrigated with compound solution of cresol and water or soap and water. The patient is placed in the lithotomy position and a scrotal bandage (Fig. 4) applied.

OPERATIVE TECHNIC

I think all agree that the primary cause of the tumor-like condition is the varicosity. The operative procedure, then, should have for its object the removal of this varicosity.

Since the primary cause of each type of hemorrhoids is practically the same and the difference in structure is only one of degree, the treatment of each variety is—and should be—technically the same. That the technic may be more readily comprehended, I shall first consider the treatment of the thrombotic pile:

1. Pennington, J. Rawson: Regional Analgesia in Surgical Treatment of Anorectal Diseases, Am. Med., July 29, 1905.

After the patient is prepared and the tumor anesthetized (infiltration anesthesia only is necessary in this variety), an ellipse commensurate with the size of the pile is removed from the covering of the clot, the latter picked out, and the dressing applied (Fig. 4). I usually dress the wound with rubber-dam, and over this gauze, or with petrolatum and gauze, and a T-bandage. There is little or no after-pain, and the patient is well in a very short time.

Had the blood in the swelling been fluid, it would not have been necessary to pick it out, as it would have escaped and the wall collapsed as soon as the ellipse was removed and the varicosity destroyed. The after-treatment also would have been the same. Should a spurting vessel be exposed in the course of the procedure, it is picked up and twisted or ligated. Such is the principle involved in the open method of treating hemorrhoids.

Because the internal piles are located in the proximal (or rectal) cone it is necessary to bring them into view (Fig. 5). This, after gently stretching the sphincter, is done by means of four T-forceps applied as shown in Figure 5. *Vis a tergo* pressure is made at the base of each pile, forcing it into the field of operation, and an ellipse varying with the size of the swelling removed from the covering of the varicosity by means of scissors curved on the flat (Figs. 5 and 6). Frequently this procedure also destroys the pathologic condition; if it does not, this is readily accomplished by another and deeper cut with the scissors.

The "fleshy pile" is treated in a similar manner. A section is excised from the apex, and then the inside of the pile is removed with the flat-curved scissors (Fig. 7). Sufficient of the mass is removed so that the anal region will assume a normal surface when the operation is completed.

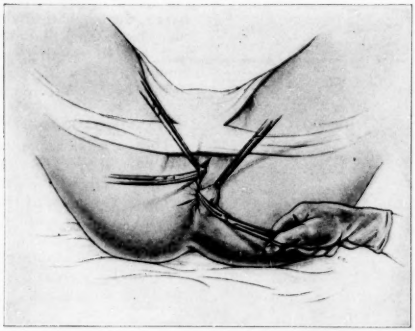

Fig. 7.—Removal of an ellipse from the apex of a "fleshy pile," then dissection out of the inside, and the slit-like appearance of the cavity after the dissection.

In some instances, a ring of flesh completely encircles the anus and extends distally for an inch or more. When this is the case it is removed by the same technic.

The field is then cleared of blood clots and a rubber-covered tampon, which dresses the field in extension, is introduced into the rectum (Fig. 8). Hot wet dressings, a piec of protective and a snugly-fitting T-bandage are now applied.

The dressings and tampon are removed in from eighteen to twenty-four hours, and the hot fomentations continued.

In six or eight hours thereafter, an enema of 3 ounces of olive oil and a laxative are given. The patient does not use a bedpan, but gets out of bed and goes to the water closet or commode; wet cotton is used as a detergent.

Hot fomentations are applied every four to six hours for a few days. The average patient is dismissed on the third or fourth day after the operation. Occasionally one will remain a day or two longer; on the other hand, they frequently leave earlier.

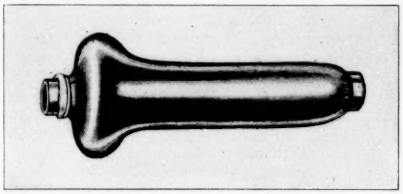

Fig. 8.—Author's rubber-covered tampon. It dresses the wound in extension, lessens pain when properly applied, and facilitates recovery.

31 North State Street.

PARALYSIS OF THE UNGUAL PHALANX OF THE THUMB FROM SPONTANEOUS RUPTURE OF THE EXTENSOR POLLICIS LONGUS

THE SO-CALLED DRUMMER'S PALSY

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The structure of tendons represents so perfect a combination of strength and elasticity that rupture under normal conditions is practically impossible. When such accidents occur as the result of violent strains, either the muscle tears or the periosteal insertion of the tendon gives way, often carrying with it a fragment of the subjacent bone.

Before a rupture of the tendon itself takes place, it must first have been weakened by disease, the resulting degenerative changes rendering it incapable of bearing the normal strain of muscular action. For example, the long head of the biceps may rupture after the tendon structure has first been weakened by inflammatory changes secondary to an arthritis of the shoulder joint.

The particular accident which is the subject of this paper is an extensor paralysis of the distal phalanx of the thumb from spontaneous rupture of the tendon of the extensor pollicis longus. The affection is evidently rare, and the case which is herein described is the only one which has ever come under my observation, nor am I aware of any contributions to this subject in American literature. Most of the observations are of German origin, and more especially the medical reports of the German army for reasons which will be referred to later.

REPORT OF CASE

History.—The patient, a tailor, aged 31, devotes from ten to twelve hours each day to his occupation, and much of this time is spent in sewing with a coarse, heavy needle. In addition he also uses an iron in pressing clothes. He is very insistent that there was no warning pain or discomfort in the affected thumb previous to the onset of the paralysis, which occurred in the following manner:

Oct. 25, 1914, after a day's work, he was preparing to leave the shop, and inserted his right hand in the trousers pocket searching for some object, twisting and turning the hand about as one does when trying to explore its various angles and recesses. While doing this he was suddenly seized with a sharp and very severe pain over the posterior surface of the wrist on its radial side, and the back of the first metacarpal bone. On removing his hand from the pocket he was quite unable to extend the end phalanx of the thumb, while flexion could be readily performed. He had great pain over the dorsal surface of the hand and first metacarpal bone which continued for several days, and this region was very sore and sensitive to the touch for a fortnight. Since the accident he has been unable to use the needle and pursue his accustomed calling. In addition to pain and tenderness, there was also some swelling in the same region.

Examination.—Dec. 1, 1914, there was a complete isolated paralysis of the extensor of the end phalanx of the right thumb (Figs. 1 and 2). The patient could flex quite strongly this segment of the thumb, but there was not the slightest power of extension. In contrast to this, there was very fair ability to extend the basal phalanx of the thumb as well as the first metacarpal bone. All the other movements of the hand and fingers were perfectly normal in every way. The paralysis and disability were strictly limited to the distribution of the extensor pollicis longus muscle or, as it is sometimes termed in our anatomic nomenclature, the extensor secundi internodii pollicis.

Fig. 1 (Case 1).—Rupture of the tendon of the extensor pollicis longus. Note the isolated extensor paralysis of the ungual phalanx of the thumb. Below is a normal hand showing the thumb in full extension.

When the tendons on the dorsal surface of the thumb were rendered prominent by strong extension, the normal prominence of the extensor pollicis longus was found to be absent. This tendon, as is well known, forms the ulnar border of that small triangular space which the early anatomists termed the snuff-box. The radial border of the so-called snuff-box or *tabatière* is formed by the tendons of the extensors of the basal phalanx and the metacarpal bone of the thumb, which emerge together in this region from a groove in the styloid process of the radius. The prominence of this tendon and the absence of the long extensor are well shown in Figure 2.

If the finger was drawn along the course of the long extensor of the thumb, there became palpable just below the posterior annular ligament a small, movable, rounded swelling which was still slightly sensitive to pressure. This nodule corresponds to the distal end of the ruptured tendon. The proximal end was not palpable.

Electrical examination failed to elicit any kind of response in the extensor pollicis longus muscle. Reactions of all the other muscles of the hand and forearm were normal. There were no reactions of degeneration. The sensations of the hand were normal, and a careful general neurologic examination showed normal pupillary, tendon and skin reflexes and normal musculature without evidences of atrophy or fibrillation. The urine was free from albumin and sugar, and the visceral examination was negative.

The man was told the nature of the lesion, and a suture of the severed tendon was recommended, but operative intervention was declined.

COMMENT

This peculiar type of paralysis has been well known to German military surgeons for a number of years, under the title of drummer's paralysis or drummer's tendon. In the medical reports of the Prussian army, extending from 1870 to 1904, von Wurthenau[1] collected sixty-two cases, all occurring in drummers. The condition is the result of a chronic tenosynovitis induced by a peculiar method of holding and using the left drumstick, which causes mechanical irritation of the long extensor tendon of the thumb as it emerges from its special compartment in the posterior annular ligament of the wrist. This in time causes pathologic alterations in the tendon and its sheath, and eventually rupture takes place, either during a paroxysm of drumming or more rarely quite spontaneously. It is said that the affection occurs usually in beginners and exclusively on the left side.

It may be assumed that the same mechanism and pathologic consequences were involved in the case of the tailor which is reported above. The fact that there was no warning pain has been observed in other cases and does not exclude previous weakening of the tendon at its site of rupture below the annular ligament.

In a few of the cases, microscopic studies of the diseased ends of the severed tendons have shown hyaline swelling, necrosis and separation of the tendon fibers.

The symptomatology is essentially the same in all of the cases, namely, a sudden paralysis of the ungual phalanx of the thumb which may or may not be preceded by pain or soreness along the course of the tendon. The actual rupture may occur quite painlessly; but more frequently a sharp, piercing pain is felt over the back of the wrist, often shooting up into the forearm. The tendon may be swollen and tender, and if ruptured, a tender, movable nodule is often palpable just below the annular ligament which corresponds to the distal stump of the severed tendon.

Electrical stimulation for obvious reasons is without visible effect on the special extensor movement which is lost. Although the muscle may respond, its contraction is not registered by an extension of the ungual phalanx, owing to the tendon separation. This fact is an important one, for if the paralysis were of neural

1. Von Wurthenau: Beitrag zur Trommlerlähmung, Deutsch. mil.-ärztl. Ztschr., 1899, xxvii, 554.

origin, as is held by some writers, reactions of degeneration would be demonstrable.

Another important diagnostic sign is the absence of the prominence of the extensor pollicis longus tendon which normally forms the ulnar border of the snuff-box (Fig. 2). All of the evidence tends to show that the usual seat of tendon rupture is just after its emergence from beneath the posterior annular ligament. This has been confirmed in a number of instances by operation, and the divided tendon found to be the seat of chronic inflammatory and degenerative changes. In addition to drummers, isolated instances of its occurrence in other occupations have also been recorded, namely, in a typesetter, a wood-carver, a farmer and in waiters.

In Duplay's[2] case, reported in 1876, which appears to be the earliest description of the condition, it had occurred in a cane-maker.

Of special interest are those traumatic cases in which rupture of the tendon has followed some weeks after fracture of the radius at the wrist, the tendon having suffered injury at the time of the accident, but rupture not taking place until after the fracture had healed and the function of the hand was restored. In other cases, rupture of the tendon has followed straining injuries, such as a backward fall on the hand.

The indications for treatment are very clear. If the condition is seen immediately after rupture has occurred, an effort may be made to effect union by fixation of the thumb. In older cases and when union does not take place promptly, the only chance of restoring function is by uniting the divided tendon by some method of suture. In some of the cases it has been impossible to bring the divided ends together because the distance separating them was so great. Under these circumstances the proximal end has been sutured to the tendon of the extensor carpi radialis (Duplay,[2] Schlatter[3] and Zur Verth[4]) or to the extensor indicis longus (Hager[5]).

Fig. 2.—Extensor paralysis of the end phalanx of the thumb. Observe the absence at the wrist of its long extensor tendon, which forms the ulnar margin of the snuff-box. The tendon of the extensor brevis pollicis stands out prominently. Below is a normal hand for comparison.

For anatomic reasons, a better functional result would probably be obtained by suture to one of the tendons of the thumb, either the extensor ossis metacarpi pollicis or the extensor primi internodii pollicis.

It is of interest to add that in drummers, isolated paralysis of the flexor of the ungual phalanx may also occur, caused by paralysis of the function of the flexor longus pollicis. This occurs, however, much less frequently than the extensor type, and is attributed to a faulty method of hooking the end of the thumb over the end of the drumstick to prevent its slipping from the hand. It is like the extensor palsy, a tendon disease, a chronic tenosynovitis with consecutive fragilitas tendinum and rupture. In von Zander's[6] series, there were twenty-three cases of the extensor and only three of flexor palsy of the end phalanx of the thumb.

The reasons for excluding a neural origin of these extensor palsies of the thumb are: the acute onset of the paralysis and the associated symptoms of tenosynovitis below the posterior annular ligament; evidences of rupture of the tendon either by palpation of the nodular enlargement of the distal end or by actual demonstration at operation, and the total absence of electrical responses in the extensor pollicis longus, either normal or degenerative. An additional argument against the neural theory is to be found in the joint innervation of the extensor pollicis longus and extensor indicis from a single small branch of the posterior interosseous nerve, which would render isolated paralysis of the one without the other, on anatomic grounds, very improbable.

CONCLUSION

It may be said that the extensor paralysis of the end phalanx of the thumb is a very rare affection. It results from rupture of the tendon of the extensor pollicis longus as it emerges from beneath the posterior annular ligament of the wrist. Trauma and a variety of occupations have been found to be the cause of this accident, all of which have tended to induce low-grade inflammatory and degenerative changes in the tendon, which predisposes to spontaneous rupture. Drummers are especially liable to this affection; hence the term "drummer's palsy."

If evidences of union do not occur after a brief period of fixation of the part, function can be restored only by a tendon operation.

The term "drummer's palsy" is a poor one and is misleading, for the reason that the lesion is not neural and therefore not a true paralysis, nor is the condition one which is confined solely to drummers.

Therefore, if this term is used, it should be with the understanding that the affection is one of the tendon and not of the nerve.[7]

20 West Fiftieth Street.

2. Duplay: Rupture sous-cutanée du tendon du long extenseur du pouce, au niveau de la tabatière anatomique, Bull. et Mém. de la Soc. de Chir. de Paris, 1876, ii, 788.
3. Schlatter: Subkutane Sehnenzerreissung an den Fingern, Deutsch. Ztschr. f. Chir., 1907, xci, 317.
4. Zur Verth: Ueber spontane Zerreissung der Sehne des langen Dammen streckers, Deutsch. Ztschr. f. Chir., 1909 cii, 569.
5. Hager: Pathogenese und Behandlung der spontanen Sehnen ruptur, Berl. klin. Wchnschr., 1886, xxiii, 360.
6. Von Zander: Trommlerlähmung, Inaug. Dissert., Berlin, 1891.

7. In addition to the references already given, the following will be found of interest:
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Schaefer: Ueber Arbeits Paresen, Inaug. Dissert., Berlin, 1890.
Steudel: Die Trommlersehne und ihre Behandlung, Deutsch. mil.-ärztl. Ztschr., 1899, xxviii, 554.

The Usefulness of Discarded Theories.—The advance of science is not comparable to the changes of a city where old edifices are pitilessly torn down to give place to new, but to the continuous evolution of zoologic types which develop ceaselessly and end by becoming unrecognizable to the common sight, but where an expert eye finds always traces of the prior work of the centuries past. One must not think then that the old-fashioned theories have been sterile and vain.—Edmund B. Wilson, *Science*.

HEREDITARY SYPHILIS

IN CONNECTION WITH CLINICAL PSYCHOLOGY AND PSYCHOPATHOLOGY *

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Fit morbus hereditarius et transit a patre ad filium
Paracelsus, 1529.

In relation to clinical psychology and its proximate interests, psychopathology, juvenile delinquency and even pedagogics (*Heilpädagogik*), the problem of congenital syphilis looms up with increasing importance as the results of recent studies are examined and older data pondered anew; for we find not only that syphilis in the ascendants may account for nervous and mental abnormalities covering the entire gamut of neuropsychic disturbance—from mere nervousness to complete idiocy—but also that timely and active treatment may improve or even cure[1] such neuropathy or mental enfeeblement, or arrest the progress of deterioration. The subject, besides, is rather singular inasmuch as the diagnosis is not easily inferred, the facts being purposely or not purposely withheld, or come upon by means of barest clews. With a little more knowledge of the effects of inherited lues, many a nervous symptom, neurosis and aberrant characteristic enigmatic before will have been explained.

Acquired syphilis in childhood is not common (occasionally contracted from a wetnurse), nor does its recognition usually present any difficulties. With congenital or hereditary lues, however, lies the rub. In the majority of cases the anamnesis leaves us in the dark, the mother having no knowledge of an infection or denying it or, again, remembering absolutely no occurrence of "secondary" luetic manifestations in the child.

To ferret out the facts one must question *both* parents, not only as to their knowledge of primary infection, but also as to occurring secondary symptoms, in which case one may sometimes elicit enough for a tentative diagnosis. Not infrequently, however, secondaries may be so mild as not to be noticed by the individual (Nonne[2]). A superficial (that is, rapidly carried out) examination of the parents may show some sign or stigma (of lues, or degeneracy) which may aid in our summing up, or even some stigma of congenital lues; that is, the mother of the child in question may herself have been congenitally luetic and have passed the infection to her offspring—*congenital syphilis in the third generation*. And if she shows no stigmata (she will in all probability have no knowledge of her condition), the problem of detection becomes even more difficult. But, one will ask, did not the child itself show signs of secondaries at birth or in very early infancy? These may also have been so mild as to be overlooked—or possibly there were none (the still undecided problem of "late congenital lues").

In approaching our subject, let us first examine the factor of heredity itself in this connection: How does syphilis in one or both parents[3] affect their offspring?

A. The organism of the disease, *Treponema pallidum*, may be transmitted to the embryo, which is then also syphilitic — the organism circulating in its blood. The morbid products or toxins of this organism have an *inhibiting* potency, and the evolution of the embryo or fetus, if the germ plasma itself continues to unfold, may come to various incomplete issues, that is, (*a*) it may cease developing and be extruded (abortion); or (*b*) the fruit grows, but is born before the normal expiration of intra-uterine life (premature birth), in which case it is immature, frail, below weight, possibly marasmic—and hence more vulnerable to disease. This premature child may die directly after birth, or soon thereafter; (*c*) the fruit may develop for a time, or even to term, and be born dead (stillbirth). Hence the frequent history from luetic mothers as to sterility, abortions, stillbirths, premature children, children dying soon after birth; and hence the importance of inquiring if this was the case, in taking an anamnesis. On the other hand, such a mother *may* bear several children without having had abortions, etc., who remain alive, and with but few or mild symptoms. In a case noted by Milian, such a patient had six living children, though she was luetic.

A study of Nonne's material,[4] for instance, showed the following: Ninety syphilitic families were examined; eight remained sterile. In the remaining 82 families, 350 pregnancies occurred. Ninety-one, or 26 per cent., ended in abortions, 10, or 2.9 per cent., in stillbirths, 66, or 18.8 per cent., died small, 183, or 52.3 per cent., remained alive. Of the latter, only 119 were examined. Thirty-six were found normal, 83 pathologic. Expressed in other words, 47.7 per cent. of the fruits of the syphilitic parents died or were extruded before term. Only 52.3 per cent. remained alive, and one could reckon that of these, 35.8 per cent. were pathologic. If but one parent was diseased, there was a child mortality of only 37 per cent.; if both were diseased or gave a positive Wassermann reaction, between 47 and 53 per cent. In eighteen families, A. Fournier counted 161 pregnancies of which 137, or 85 per cent., were stillbirths. J. N. Hyde[5] found that 116 out of 121 syphilitic infants died in the first year, etc. Hochsinger himself speaks of 67 families in which there were 266 pregnancies, of which only 142 came to term, but 76 infants died within the first days; 124 were premature and dead. Lesser[6] examined 89 children (of 35 families), of whom 32, or 33 per cent., were well, 57, or 66 per cent., were syphilitic. Of these, 29 had signs of congenital lues.

Again, (*d*) the child may be born at term and show signs of syphilis and nevertheless live on. These signs may be few and not very distinct, may be transient, or may flourish. They are the so-called "secondaries." Or (*e*) there are no signs whatsoever at birth, in spite of obtaining syphilis, the "secondaries" breaking out a few weeks later. Or (*f*) there is nothing present for weeks, months or years, the disease being

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1. Oppenheim, H.: Lehrbuch, Ed. 6, ii, 1281. Ziehen also states that he saw the intelligence defect of a 13-year old feeble-minded girl entirely clear up on energetic antiluetic treatment.

2. Nonne, M.: Syphilis und Nervensystem, Karger, Berlin, 1909, p. 546.

3. There is still an unsettled controversy as to whether there can be a paternal hereditary syphilis, that is, whether the spermatozoa can pass the syphilitic organism to the embryo, the mother remaining free from disease, or getting it from the paternally infected embryo (or her acquiring an immunity through the carrying of such an infected fruit); or whether the husband must first infect the wife, who then through the placenta, passes it on to the embryo. The latter is probably more widely believed than the former. For our own problem this is of little moment. See Deutsche medizinische Wochenschrift, 1914, Nos. 15, 24 and 25.

4. Raven: Serologische und Klinische Untersuchungen bei Syphilitiker-Familien, Deutsch. Ztschr. f. Nervenheilk., 1914, li, (Sonderabdruck, Vogel, Leipzig).

5. Hyde, J. N.: Quoted by Hochsinger: Die Gesundheitlichen Lebensschicksale erbsyphilitischer Kinder, Wien, klin. Wchnschr., 1910, Nos. 24 and 25. See also his article on Syphilis in Pfaundler and Schlossmann's Handbuch der Kinderheilkunde, i, Part 2.

6. Lesser: Verein f. inner. Med. u. Kinderheilk., Berlin, Feb. 9, 1914; Ref. in Deutsch. med. Wchnschr., April, 1914.

latent, and becoming manifest only after from eight to twenty-eight years[7] in the form of "tertiary" lues (so-called "syphilis hereditaria tarda," or late hereditary syphilis, or *tertiarisme d'emblée*).

That tertiary symptoms occur similar to such in the adult without the earlier appearance of "secondaries" still remains a much mooted question. So only recently Finkelstein[8] again challenged the theory and said he believed that the "secondaries" in such a case either had occurred *in utero*, or appeared after birth but were of so slight a nature as to be overlooked (a few spots on the soles and nothing more, or a slight induration of the soles, of a fleeting nature, or a light anemic yellow discoloration of the skin, or on near examination a very slightly enlarged spleen, or an enlarged and sensitive cubital gland. These may even first be seen in the fifth or sixth month, etc.) This has no very great importance for us, however, who are to remember that whether there be a real syphilis hereditaria tarda or whether this is only an "overlooked" syphilis (syphilis occulta), the abnormality of the patient before us may be due to lues even if there be no history of "secondaries."[9]

B. There is a second way in which syphilis of the parents affects their offspring. Such parents are themselves constitutionally affected by the disease, and hence the germ cells uniting to form the embryo may also, one or both, be affected, depleted or invalidated, just how cannot be said; possibly it is a molecular disturbance, possibly chemical through the poisonous metabolism of the treponeme itself; possibly it is but a condition of very low vitality, a marasmoid state. Howsoever this may be, the fact remains that this embryo, without containing the infective organism itself, enters from the start on a darkly checkered career whose fate may be almost as sinister as that of the really infected embryo. Here the development may also be inhibited or retarded; or the fetus may not develop to term;[10] or be born prematurely, or with deformities, dystrophies, aplasias, etc.; or the child at term is marasmic, puny, weak and miserable.[11] For us it is especially to be borne in mind that in the general invalidation of such an individual, the nervous system bears its share, at times the very brunt of the defect. Besides, its lack of resistance makes it prone to further injury. This, then, is the effect of germ damage, not germ infection. Such children will give no Wassermann reaction. They are not syphilitic but neuropathically or psychopathically constituted or marred. No doubt both facts *A* and *B* may at times be combined. Strictly speaking one might call the cases of germ damage as the really hereditary, and of germ infection as the congenital. In the former, nothing can be accomplished by specific treatment. What a problem this for the sociologist and the eugenic enthusiast!

But a third possibility must be borne in mind, namely, *C*, that such parents may have an entirely healthy child and one that remains so.[12] Such parents may have several children, some of whom are affected, some remaining normal. A normal child may follow a diseased one, and such may again be followed by one with syphilis. No rule whatsoever is observed here.[13]

Not irrelevant in this connection are some recent observations by Nonne and his assistants (see articles of Hauptmann[14] and Raven[4]). It would appear (though it has not yet been definitely established), that the disease condition in the children surviving in syphilitic families is the less severe the more intense the disease was in the parents, as if the virulence of the disease becomes more "attenuated" in the offspring, the more severe or outspread was its passage through the parent. This study leads one also to believe that in families in which one parent remained free (chiefly the wife in Nonne's series), the greatest percentage of affected children occurred, in which case the prognosis was better for the offspring, should it survive, if both, rather than one parent, were affected. This, too, however, Raven points out must still be substantiated in the material of others, as it is not in accord with former findings. More conclusive is the observation that the augury is much graver for the offspring when not the father but the mother is diseased. Fifty-two syphilitic men occasioned 154 pregnancies, of which only one-half matured or remained alive. In twenty cases of maternal syphilis there were seventy-four pregnancies, of which only a fifth came to term and remained alive. A. Fournier also found that in purely maternal syphilis, 84 per cent. of the offspring were affected; in paternal syphilis, 37 per cent.

We keep in mind, then, the possibility of children who are actually syphilitic, such who were germinally affected but not infected, and who now present abnormalities, that is, psychopathic divergencies (but no syphilis), and finally such as may be entirely normal, or again only apparently normal, the abnormality to break out later. These facts necessitate our remembering, in taking the anamnesis of any child, that we must inquire carefully about the condition of other children in the family, for another child may give the clue of a syphilis that otherwise would never be dreamed of.

For instance, a little patient is brought because of headache and fatigue; the mother knows nothing of syphilis—does not know what it is. The child shows no signs of any kind. Syphilis would scarcely occur to one's mind. A brother has epilepsy and enuresis, and is slightly debile. Even that scarcely points to a specific disease, though it brings up the possibility. But a third child has an interstitial keratitis. That makes one take a Wassermann reaction.

Let us now see what the condition may be both in the patient and in the parents of the patient, and in what way the interrogation and examination of the latter may put us on the scent of lues in the child, or help in clearing up the doubt when we suspect it but find no signs: We may get a history, in the parents, of a primary infection. But the father may deny it and the mother in a large percentage of cases is

7. Oppenheim (Lehrbuch, Ed. 6) states that such may break out even in the third or fourth decennium. Fournier gives the possible limits as from 3 to 28, but 12 as the maximum. Rable found the first symptoms to appear between 17 and 18. The greater number of cases seem to occur between the twelfth and fourteenth years.

8. Finkelstein: Deutsch. med. Wchnschr., June 25, 1914, p. 1346.

9. See Case 1 at end.

10. We see the same in chronic alcoholism; that is, alcohol acts similarly to the poison of syphilis; so does lead; and women chronically poisoned by alcohol, syphilis or lead, all abort or miscarry, etc., and there is a high mortality among their offspring. See Sullivan's study of the children of female drunkards in the Liverpool prisons (Med. Temper. Rev., iii, 4).

11. Many syphilitic children go to pieces on tuberculosis. In Hochsinger's series, 80 per cent. of the deaths occurring after the second year were due to tuberculosis. Rickets also occurs often in these children, more frequently than in non-syphilitic. All this refers to both Groups A and B.

12. It must therefore be remembered by the pediatrician that a wet-nurse may have a healthy child and yet be luetic.

13. Kassowitz, however, pointed out that in general the results are severer at first and less severe as one gets further from the infection—first abortion, then stillbirth, then living child, etc. But there may be exceptions. Nonne also found that the first and second and still the third children were more severely affected than later ones.

14. Hauptmann: Ztschr. f. d. ges. Neurol. u. Psychiat., viii, No. 1.

entirely ignorant of it.[15] One or other may give a history of "secondaries," or of "tertiary" symptoms, or evidence signs of tertiary syphilis, or of tabes or paresis. And finally, one may happen on signs of congenital syphilis in the parents—the patient having a condition of congenital syphilis in the third generation.[16] Wherever, then there is a positive history, or luetic signs are present in the parents, we must reckon with a possibility (even a rather strong possibility if the patient is one of the first three children) of congenital lues in the child, in which case, signs or no signs, etc., a Wassermann test of the child is imperative. Nonne even remarks that not only on the children of paretics, should one make a Wassermann reaction, but in the children of the children of the same.[17] Of course we shall make a Wassermann reaction on the mother always, even when the mother's history and examination are negative, but a symptom or sign in the child suggests lues; and sometimes in coming out positive it will lead us to a definite diagnosis. But just here we are more often thwarted by the curious fact that the mothers of luetic children may give a negative Wassermann reaction.[18] How explain it? I have already referred to this.[3] It has been thought that the mother in carrying a syphilitic fruit may attain an immunity without contracting the disease (Colles' mothers), such a mother being then syphilis-immune but not syphilitic. Lesser,[6] however, asserted that when such mothers were tested directly after the birth of their syphilitic child, nearly 100 per cent. of them gave a positive Wassermann reaction. He therefore believes that when a negative reaction occurs in such mothers there has been a spontaneous cure, but that such mother has been syphilitic. A negative Wassermann reaction in the mother, then, does not negate the possibility of syphilis in the parents having caused the obtaining abnormalities in the child before us.

Now what may be the various conditions obtaining in the children (or grandchildren) of syphilitic parents? I shall note only what is of importance to us in clinical psychology and as neuropsychopathologists. The severe cortical involvements we need scarcely dwell on, for it is well known and taken for granted that idiocy and imbecility are, in goodly proportion, due to congenital lues,[19] and a careful clinician will in all such cases make a Wassermann test and look over the individual for stigmata, history or no history. Of far greater importance, and offering decidedly more danger and possibility of oversight, are the milder manifestations; and so we had better start from the least enweighted end of the scale.

We have seen that an entirely healthy child may be born to luetic parents; and again a child may be born who is only apparently healthy, but who has a latent syphilis which may become active later (and which child might give a positive Wassermann reaction, if tested). Such cases are not exactly rare in the literature, and would more often be noted if constantly thought of and properly diagnosed. Suddenly out of a clear sky, symptoms may appear; or the child advances normally up to its tenth or eleventh or twelfth year, and then without apparent or ascertainable cause ceases in its mental development or begins to deteriorate. The first sign may indeed be mere mental defatigation (as in a case of Nonne's), which then soon shifts into the sorrowful state of early paresis.[20] Or, again, epileptic seizures may first occur and initiate the mental change and final cessation; or suddenly an amaurosis may be contracted.[21]

Whereas the various visceral bone and skin manifestations are common in the infantile and early periods, the nervous system, when affected, shows severe changes usually about puberty. But even before this time there may be enough evidence if the possibility of such is remembered. So Hochsinger pointed out that, in his very extensive material, such children showed an "irritable weakness" or excitability, and especially a fatigability, of the general nervous system, and nothing more. This, in fact, was his most frequent observation. But there are still other manifestations to bear in mind. Such a child may be just "headachy," particularly at night,[22] or it may have a tendency to migraine, chronic vomiting, dizzy spells or epilepsy. A choreic condition may exist; that is, a persistent chorea may be luetic and not rheumatic.[23]

A neurasthenia,[24] hysteria or hysteroneurasthenic condition may be the clinical expression of a congenital

15. Cassel reported that of 41 mothers of congenitally luetic infants, 34 denied any knowledge of infection. Yet 19 of these, or 56 per cent., gave a positive Wassermann reaction. Lesser found the same in 19 out of 27 cases, Boas in 13 out of 13, and Knopfelmach in 59 per cent. of his cases. In Cassel's cases 7 showed no signs whatsoever; 11 had a negative Wassermann reaction, 3 showed symptoms, 8 had neither signs nor Wassermann reaction. Again Rietchel, testing the wetnurses at the Dresdener Säuglingsheim, found that 10 per cent. gave a plus Wassermann reaction, though they had shown neither signs nor symptoms of the disease. These facts incidentally show that there is no absolute way of telling that a wetnurse is non-syphilitic, though this is probable if besides the absence of signs and symptoms, both mother and children of mother show a negative Wassermann reaction.

16. See Nonne's recent paper, "Ueber Syphilis Congenita in Dritter Generation," Sonder-Abdruck, Voss, Leipzig, 1914.

17. Nonne: Ueber Syphilis Congenita in Dritter Generation, p. 113.

18. According to R. Miller (Note 50) only about 15 to 20 per cent. of untreated mothers who bore luetic children some considerable time ago give a Wassermann reaction.

19. Lippmann (Deutsch. Ztschr. f. Nerv., xxxix) found syphilis a factor in 40 per cent. of cases. These figures are, however, much higher than that of other observers. Ziehen (Geisteskrankheiten des Kindesalters, Berlin, 1902, No. 1, p. 10) found it to be a probable factor in 17 per cent. and positively in 10 per cent. of his cases of milder congenital feeble-mindedness. Wildermuth (cited by Nonne) holds 11.8 per cent. of idiots to be congenitally syphilitic. Veeder and Jeans (Am. Jour. Dis. Child., October, 1914, p. 283) found 14 out of 33 cases of feeble-minded coming to their wards to be syphilitic. On the other hand, Boas (Die Wassermann'sche Reaktion, Berlin, 1914, p. 126) tested 2,061 feeble-minded in Denmark and obtained a positive Wassermann reaction in but 31. For Denmark, at least, this author concludes, congenital syphilis plays but a small part in the causation of feeble-mindedness. Still more recently Findlay and Robertson (Glasgow Med. Jour., 1914, lxxxii, No. 6, p. 415) state that 10 per cent. of mental defectives seem to be congenitally syphilitic.

20. In a similar way dementia praecox may first evidence itself. In this connection it may be interesting to point out that dementia praecox has been thought of as standing in some direct or indirect relationship to congenital syphilis. See, for instance, Megendorfer: Ueber Syphilis in der Ascendenz von Dementia Praecox-Kranken, Sonderabdruck aus Deutsch. Ztschr. f. Nervenheilk., 1914, li.

21. Cramer: Die Nervositat, 1906, p. 18.

22. In one of my cases, however, the headaches occurred especially and regularly in the mornings on getting up.

23. See Cases 1 and 2 at the end. Milian reported a case (Society Report, Deutsch. med. Wchnschr., 1914) in which a child had chorea. The mother and father gave a negative Wassermann reaction. Later the chorea was cured, but the child remained decidedly clumsy (ungeschickt). Both in the child and in the mother the Wassermann reaction later became positive. This child showed the following abnormalties: a somewhat protruding or vaulted forehead, hair growing into the forehead, moderate stump nose and slit-eyes, iris of two colors, linear transverse nail leukoma, irregular position of teeth, abnormalities of outer ear, etc. (These abnormalities are stigmata partly indicative of lues and partly of degeneracy.) Elsewhere (Soc. méd. d. hôp., Nov. 29, 1912) Milian stated that congenital lues is found in a very large proportion of chorea cases, so large that he thought one must ask whether chorea is not a manifestation of hereditary lues. His paper was thoroughly contested. Nevertheless, whenever chorea runs over three or four months (the usual type seen in association with or after rheumatism), and when we get no history of previous rheumatism, hereditary lues must certainly be kept in mind. A cardiac murmur will not aid us in the diagnosis, for in the experience of some, lues, both congenital and acquired, is one of the most frequent factors in causing cardiac disease (see Warthin, Am. Jour. Med. Sc., May, 1914; also Findlay and Robertson, Congenital Syphilis, Glasgow Med. Jour., lxxxii, No. 6); hence in both rheumatic and luetic chorea, murmurs may be heard. Still another etiology must be borne in mind: the chorea may be psychogenic. Ever so many choreas that look "real" are psychic, especially the recurring attacks in neurotic or hysteric children. Suggestive (hypnotic) treatment sometimes clears up such cases almost at once. And we must bear in mind the frequency of a neurotic or hysteric constitution in these congenitally luetic individuals (see next paragraph). It may be remembered, too, that Friedreich's Ataxia has been thought of as a result of congenital lues (see Jahrbuch f. Kinderheilkunde, lxxix, No. 5).

24. See Case 3 at end.

syphilis. It is interesting to remember that Freud[25] pointed out that in more than half of the severe hysterias and obsessions, etc., treated by him, the father of the patient was syphilitic. These patients showed no bodily symptoms of lues, and their psychopathic constitution was looked on by him as a "leutic inheritance."

In some cases the child, mentally normal or even unusually advanced, may show a mental unrest, lability of mood, and especially, as Nonne[26] has pointed out, disturbance of sleep (see Cases 4 and 5). Nonne, like Hochsinger calls attention to this nervous depletion or "below-parness" in children with syphilitic ascendants; or again, a physical and mental adynamia, or at times a lack of joy and interest in things for one so young.[27]

A teacher may report of such a child that it has difficulty in attending and learning or that it is easily exhausted on slight brain effort. These children are mentally normal. There are others, however, who show slight enfeeblement (the "debile" of the German and French classification) or backwardness or deeper grades of defectivity running into imbecility. Speech defects of various kinds may occur, and especially often, centrally caused impairment of hearing.

The mental deterioration may be of quite a different character, involving the ethical or moral sense. Though nurtured in a good family and in refined surroundings, such an individual may gradually become ungovernable, coarse and even shameless, have attacks of rage, do violent things, lie and steal, and even stoop to prostitution. (Nonne[28] notes two such cases in girls of good family). These changes come on mostly after the second dentition, and are often associated with mental deficiency. In fact, Hochsinger believes that when such character anomalies develop in early childhood and in connection with lessened intelligence, it as a rule "hangs together" with paternal syphilis. Thus many a juvenile malefactor has to thank his miserable state to the unstable nervous system bequeathed him by the syphilis of an ancestor.

The importance of these facts in connection with clinical psychology, of psychopathology and even pedagogics, and especially in relation to juvenile delinquency, is evident, and yet how little do we read of it in our text-books!

Following our careful questioning of the parents as to primary infection, the occurrence of abortions, stillbirths, children dying early, etc., of "secondaries" on themselves (polyglandular swelling, rash, headaches, loss of hair, ulcerated throat, etc.), and finally of "tertiary" manifestations (paralyses, etc.), then as to "secondaries" in the child (the patient) itself, at or soon after birth (snuffles, nasal discharge, indurations, excoriations, eruptions,[29] scaling skin, pemphigus, especially near palmar and plantar regions, "sore finger nails," bone, joint or visceral disease, "eye trouble," and possibly great restlessness, crying,[30] sleeplessness, a miserable or cachetic state generally, and lastly, convulsions[31]), we examine our patient for signs of congenital or hereditary lues.

These signs, or "stigmata," as they are called, are sometimes, not always, quite evident, especially in the second period of childhood (later in life some of them may fade out or disappear). They are the saddle or stump nose, Hutchinson's teeth (namely, the upper, permanent, inner incisors, notched crescentrically on the biting edge), opacities on the cornea (marks of earlier interstitial keratitis[32]) and rhagades, or radial thickenings and scars, peribuccal or especially at the corners of the mouth or junction of the nose and lip (also at times on the fingers near the roots of the nails, and perianal). These rhagades are the most important signs, and Hochsinger speaks of them as unquestionably pathognomonic. The Hutchinson teeth may at times be due to other serious disturbances of nutrition through acute or chronic disease before the advent of the second dentition. When proper treatment is pursued early in childhood, they rarely are found. They are unusual enough as it is, not by any means seen as often as the text-books make it appear. Far more often one finds the two-notched (or three-ridged) type of tooth, there being several of such, or all being of this form. The teeth are undersized and often irregularly "planted." Difficulty in hearing may also be mentioned here (due to neuritic disease of the acoustic nerve or labyrinth). It is usually double-sided and severe, associated with vertigo and subjective noises. The three conditions of notched teeth, corneal opacity and defective hearing have been described as frequently associated (so-called Hutchinson's trias).[33]

Heubner[34] pointed out that one may at times also find, added to this trias, a double-seated hydrops, or stiffening of the knee joint. It may occur with little if any pain and cause no increase of temperature; more rarely it may be found with pain, etc., and be somewhat similar to tuberculosis.

Another important set of signs are general undersize (microsomia) including a sexual underdevelopment or delayed puberty (sometimes, in fact, a state of general infantilism[35]), "saber-legs" (tibias with the convex bend, anteriorally), and especially an abnormality of the scapula, termed "scaphoid scapula" (described by Graves of St. Louis, some years ago). Nonne found this the most frequent sign in his series of cases (thirty-one times in fifty-eight children). To this "bone-group" one may add the skull, which may at times give its quota of corroboration. Here one notes a bulging of the frontal eminences or a general frontal enlargement (so-called "Olympic forehead"). The

25. Freud: Cited by Loewenfeld, Ueber sexuelle Konstitution, etc., Wiesbaden, 1911, p. 1. Dornblüth also states that the syphilis toxin may directly affect the nervous system, and this result evidences itself in neurasthenia, hysteria or epilepsy. See his Neurosen als Folge von Syphilis, München. med. Wchnschr., 1897, No. 42. That syphilis may be the provoking agent of hysteria as held by Raymond, Fournier, Tourette, and others, is of course not what is meant here. Here I refer to hysteria as the manifestation itself of congenital lues. See also Binswanger, Die Hysteria, p. 54.

26. Nonne: Syphilis und Nervensystem, Berlin, 1909, p. 558.

27. In a few cases I have noticed an "oldish" look of the face—partly given by the big forehead and some folds under the eyes, but partly too by the soberness of the child.

28. Nonne: Syphilis und Nervensystem, p. 559.

29. But there are also non-eruptive cases (Alsberg: Arch. f. Kinderheilk., lx, lxi; Finkelstein: Säuglingskrankheiten, i, 128).

30. When this is noticed chiefly at the time the child is being handled or moved, it is most probably due to bone involvement (epiphysitis). A case brought to the clinic had been diagnosed as "rheumatism": Two succeeding children of this family had the same manifestation as their initial syphilitic symptom, in spite of the fact that the mother had been treated (very probably, though, not with thoroughness).

31. When a hydrocephalus obtains, these symptoms may be due to it. In a series of such cases studied by Hochsinger, chronic vomiting was also noted. The convulsions may, however, be due to gummatous processes, or meningitis, etc., or it may be a "genuine" epilepsy due not to the syphilis but to the defective brain.

32. Lesser (footnote 6) stated that a parenchymatous keratitis may be the earliest, even the only sign, and may in fact first appear in the tenth year (usually, though, between the eighth and tenth). Ladermann saw it appear even much later, and states that even at the age of 20 an individual may develop a keratitis on a congenitally luetic basis, never having had any symptoms before.

33. Is this trias really frequent? I have not seen it often, nor have others whom I have questioned.

34. Heubner: Kinderheilkunde, Ed. 2, Leipzig, 1906.

35. Peritz: Nervenkrankheiten des Kindesalters, p. 466. Peritz shows several good pictures.

frequent coexistence of rickets, however, should be kept in mind, and rickety "bosses" not mistaken for luetic changes. One must also recollect the possibility of hydrocephalus. sometimes found, one of the effects of lues.

Thus far enumerated, the signs when present are easily seen and determined without specialized investigation. Nasal and ophthalmoscopic examination, however, may give valuable, if not (as in the latter case) convincing data. The nose may show signs of gummatous destruction of bones and cartilages (hence the "saddle nose") or septum perforation. Or the soft palate may be ulcerated or even perforated. It has also been pointed out (a fact which, however, helps us nowise in diagnosis), that luetic children frequently have adenoid growths in the nasopharynx, and because of this, enlarged cervical and submaxillary glands. Parenthetically it may here be mentioned, however, that cubital glands, when present on both sides, are mostly syphilitic and of considerable diagnositic value. They may be found at any age up to puberty. In infancy, Götzky[36] considers them almost pathognomonic of syphilis, and in older children decidedly suspicious. At times it may be the only clinical sign of latent lues. Unilateral cubital swelling is mostly not syphilitic. Normally these glands are not felt.

The ophthalmoscope may show pigment deposits in the choroid, rather conclusive evidence of a former syphilitic choroiditis or chorioretinitis,[37] or changes in the retina itself. The iris may show abnormalities, and synechia may be present. Even an optic neuritis may be found. Nor must one forget the possibility of an Argyll Robertson pupil.[38] The vestiges of an old keratitis or one still active may be seen, and this also is of great diagnostic importance.

Before terminating this chapter of signs and stigmata, let me refer to the enlarged spleen, often associated with enlarged liver, frequently found, and finally to the possibility of infantile cerebral paralysis luetic in origin.

The last-named fact is to my mind an important one and ought to be thought of. It is certainly neglected in our textbooks. Fournier found lues in the heredity of nearly all these cases; so did Althaus (cited by Nonne). Of late Bing[39] and Peritz[40] likewise put great stress on syphilis as the possible etiologic factor. Oppenheim[40] also states that hereditary syphilis appears not infrequently to be the cause of this condition. Other writers, however, have not thought that it plays much if any part. But let us consider the following: There are ever so many difficult and protracted, even instrumental labors, and yet in comparison but few cases of infantile cerebral paralysis. Here we must think of some predisposing factor. Again Littel and others noted that ever so many of these cases occurred in premature infants. We can understand how a trauma through pressure or pulling can cause meningeal (venous) hemorrhage, but how is such hemorrhage explained by the easy delivery of a premature infant? (Beside, enough cases occur in which no satisfactory cause whatsoever can be given.) Ziehen[41] mentions the fact that small bleedings may occur, and evidently do, without giving any symptoms, and may occur at times even in normal births. He cites Weyhe as having found such bleeding 122 times in 959 necropsies on infants. In twenty-three of these, lues was present. In the best chapter on the subject that I know of, Heubner[42] analyzes this matter, and also concludes that Littel's etiology is acceptable only in a minimum number of cases and only as a helping or accessory factor. He states that the necropsy studies showed more and more that the brain aplasia when found was not due to meningeal hemorrhage but to simple inhibition of development, and he holds with Ganghofner that the condition is a sign of a certain degenerative condition of the mother. Very interesting also are the findings of Ranke,[43] who noted that the brains of newly born luetic infants gave evidence of considerable structural changes, especially localized about the blood vessels, and which lead to meningo-encephalitic processes. In these foci he found the treponeme. His most important statement, however, is that in these brains, bleeding occurred very easily. If one bears these facts in mind, and also that prematurity, so frequently given as the etiologic moment, is also one of the most frequent accidents in syphilis, and that likewise an endarteritis obtains often in young syphilitic infants, and may evidence itself as an acute cerebral children's paralysis[44] the luetic etiology (hemorrhage due to luetic arteries, or a meningo-encephalitis or mere aplasia due to inhibition of development) of at least a considerable percentage of these cases must appear to us obvious and acceptable.[45]

Not to be confused with luetic stigmata are the stigmata of degeneracy, which are frequently found in congenitally luetic individuals, but indicate hereditary degeneration, or at least are signs pointing to hereditary degeneration or germ damage, but not to syphilis. Where such germ plasm has been vitiated, the individual resulting from it may show the invalidation of the stuff he is made of in both mental and physical abnormalities; these abnormalities are the tags of his inherited taint or defectivity—hence stigmata degenerationis. There are both psychic and somatic stigmata; they may be found in psychotic individuals, idiots, imbeciles, psychopathic constitutions, etc. They have nothing specifically to do with syphilis (and must not be mixed in with luetic stigmata as some writers do) though syphilis may be one of the causes of inherited degeneracy.

Much has been argued about the diagnostic value of these somatic stigmata. Their presence is no index of the amount of inherited psychopathy, for but few may be present in an individual showing severe psychic degeneracy, while at times, on the other hand, one or more may be encountered in the normal individual. On the whole, however, one may see in them with Ziehen,[46] when several are present, decided diagnostic intimation of inherited defect.

These stigmata are, for instance, abnormalities of the skull, of teeth, gums and palate, of the external ear, of the hands (webbed fingers or polydactylia, etc.), asymmetries, abnormal hair growth (as across the nose bridge, irregularly into the forehead, especially a double hair spiral), abnormal pigmentation of the iris, abnormalities of the genitals, etc. Possibly left-handedness may be added here, also an abnormally small head,[47] etc.; sometimes even a single

36. Götzky: Klinische Bedeutung der Kubitaldruesen-Schwellungen, Ztschr. f. Kinderheilk., 1913, vii, 113.

37. Cases have been described in which the luetic abnormalities in a child were so mild and atypical, with no patent physiologic signs, that no diagnosis was made until by chance the ophthalmoscope showed this choroid pigmentation.

38. Oppenheim (Lehrbuch, Ed. 6, Part 2, p. 1281) states that an ophthalmoplegia interna or even just an Argyll Robertson pupil may be the only sign of disease of the nervous system in hereditary lues.

39. Bing: Lehrbuch der Nervenkrankheiten.

40. Oppenheim: Lehrbuch, Ed. 6.

41. Ziehen: Nervenkrankheiten im Kindesalter, p. 561.

42. Heubner: Lehrbuch, ii, 145, et seq.

43. Ranke: Ztschr. f. d. Erforsch. d. jug. Schwach., 1908, ii, No. 2.

44. Heubner: Lehrbuch, i, 653.

45. Findlay and Robertson (Glasgow Med. Jour., lxxxii, No. 6, p. 408) state that, as evidenced with the Wassermann reaction about 45 per cent., of cases of spastic diplegia seem to be due to congenital syphilis.

46. Ziehen: Die Geisteskrankheiten des Kindesalters, No. 3, p. 31.

47. Möbius: Ueber Entartung, Wiesbaden, 1900, p. 113.

stigma may be most meaningful, as the double hair spiral.[48]

Finally a word as to the Wassermann reaction in these cases. No very great amount of work has been done along this line of study, yet enough to give us some valuable information. As to the Wassermann reaction itself, it should be remembered that this is characteristic but not in the strictest sense specific of syphilis. It is occasionally also found in malaria and certain stages of scarlet fever and often in leprosy. Nonne[49] believes that rarely and exceptionally it is found in multiple sclerosis. A negative Wassermann reaction means nothing, just as a positive Wassermann reaction does not mean syphilitic disease, for it may occur in a person who once had lues but is now free of subjective or objective signs of disease, that is, is well.[49] A positive Wassermann reaction means that an individual once was luetic, or that treponemes are still present.[50]

Raven[4] found in 119 children examined of syphilitic parents, 36 to be entirely well, 83 pathologic. Of these 83, only 27 gave a plus Wassermann reaction. Fourteen had it alone, without signs or symptoms, 13 had a plus Wassermann reaction, plus stigmata (of lues or degeneracy).

R. Müller[50] found that late congenitally luetic children all gave a plus Wassermann reaction, if clinical signs were present.

H. Boas[51] has the most interesting monograph on the subject. He cites several authors as having found children of syphilitic mothers who at birth gave no positive reaction but later showed syphilis. With Thomson, Boas examined 88 children of luetic mothers at birth; 31 gave a plus Wassermann reaction. In four the reaction very soon disappeared entirely, nor did they as long as observed (from three to nine weeks) develop syphilis. The remaining 27 had luetic manifestations at birth or got them before the third month at the latest, or died and showed luetic changes. Of the 57 who showed no Wassermann reaction, 42 remained well (during their observation of three months), 13 later developed luetic manifestations and gave a plus Wassermann reaction. In one the reaction was positive two and one-half months before symptoms appeared. Two died without having any plus Wassermann reaction or symptoms. Yet their organs at necropsy showed syphilitic changes.

Of fifty-four older children or adults up to 40 years with manifest late congenital lues, all reacted positively (fifty-three other children up to the age of 1 year with manifest symptoms, also all gave a positive Wassermann reaction). Hence Boas concludes that if a child has symptoms which appear to be luetic (congenitally) and the reaction is negative, then very probably they are not luetic.

Veeder and Jeans[52] also found a plus Wassermann reaction in all their cases in which lesions were present, and say: "We are inclined to be skeptical about the diagnosis of late syphilis in an untreated patient who has a negative Wassermann reaction. A positive Wassermann reaction may be the only symptom of syphilis for many months or years," etc.[53]

But how about the latent cases, in which there are no lesions present, and the patients later may come down with a mental degeneration, etc.? I have not seen any statistics of such cases, and it can well be understood why one does not make tests on children who show nothing or very little. Yet it is just to these children who show so very little that I mean to call attention in this article and to point out the importance of looking for lues. Veeder and Jeans, for instance, tested three cases with indefinite and obscure pains and found a positive Wassermann reaction. The Roentgen rays have at times shown up luetic bone changes where none were surmised (Dingelmann and Schmetz, also Götzky). The testing of brothers or sisters of children who, for instance, had a keratitis, showed a plus Wassermann reaction when there were absolutely no signs or symptoms. Careful, in fact the most careful history taking is necessary, with all our alertness and sharpness set into activity; and with the aid of the Wassermann (and possibly luetin[54]) test we shall discover a very large number of congenitally luetic whom we never suspected before.

REPORT OF CASES

CASE 1.—M. X., girl, aged 9, at present a generally high-strung alert, sensitive, somewhat restless child, is timid, but has no complaints. Birth was difficult, very slightly before normal end of term; she was cyanotic, and had to be resuscitated, but showed no abnormal signs or symptoms, though weighing six pounds. During the first year of her life she showed no abnormalities, save that she sighed constantly. At the age of 6 she had her first manifestation of chorea, which began with her attending school. This persisted three years (up to the time of coming under my treatment), at times very mild and at others extremely severe. It would be brought out even on a little excitement. During this entire period she would complain of occasional dizziness, "as if her head were going round." Four years ago she began to have difficulty in hearing, which was at first quite extreme, but gradually grew better, and is now normal. For a year she has had frontal headaches, especially on getting up in the morning. Physical examination shows no stigmata, save a mild scaphoid scapula. In the recumbent position a soft systolic murmur is heard at the apex. Mental examination is normal. When the patient was seen a year ago, the Wassermann reaction was positive (at present negative). The mother of the child has had tertiary manifestations for five years. The Wassermann reaction was at first positive but now is negative. The father died of nephritis (apparently syphilitic). The child's chorea disappeared very soon on antiluetic treatment. Several physicians must have seen this child (who was always with her mother) while the mother was being treated for syphilis, yet not one thought of diagnosing syphilis in her, or giving her antiluetic treatment; nor did the treatment she had received for her chorea seem to help her in the least.

CASE 2.—The father of the child was infected three years before marriage; he was treated for neurasthenic headache and cerebral fatigue. He married after several antiluetic "cures." The wife aborted three times, then remained sterile for four years, and finally bore the present patient, who is now 7 years of age; he developed physically and mentally normal, save that learning was very laborious for him, as he could only with difficulty fix his attention. The child was very active, and easily frightened; was a restless sleeper and ate poorly. At the age of 6 he acquired chorea, which would

48. I have been on the lookout for this stigma ever since Ziehen personally pointed it out to me. Wherever I have found it, even if it was the only stigma present, the individual was strongly psychopathic.

49. Nonne, M.: Der heutige Standpunkt der Lehre von der Bedeutung der "Vier Reactionen" für die Diagnose und Differentialdiagnose organischer Nervenkrankheiten, Deutsch. Ztschr. f. Nervenheilk., 1911, xlii, 206, etc.

50. Müller, R.: Versamml. deutsch. Naturforsch. und Aerzte, Sept. 21-27, 1913; ref. in Deutsch. med. Wchnschr., 1913, No. 45, p. 2229.

51. Boas, H.: Die Wassermann'sche Reaktion, Karger, Berlin, 1914.

52. Veeder, B. S., and Jeans, P. C.: The Diagnosis and Treatment of "Late" Hereditary Syphilis, Am. Jour. Dis. Child., October, 1914, p. 283.

53. Veeder and Jeans also report a case (p. 291) which shows that a negative reaction cannot be regarded as showing that the case is cured or quiescent.

54. S. Cannata (Pediatria, xxii, No. 7) states that the luetin reaction is specific for syphilis. The test is not always positive in congenital lues, but nevertheless gives better results than the Wassermann reaction

not improve under arsenic, but did rapidly under the administration of potassium iodid, as did also his remaining symptoms.[55]

CASE 3.—The father of the patient at the age of 20 was luetically infected. He received several inunction treatments. He died soon after 40 of paresis. The mother, apparently, as is alleged, is entirely well. After one abortion she had four children, of which the first died soon after birth. The other three children (two sons and one daughter) developed physically entirely normally. The eldest of these, however (son) remained behind mentally, and finally had to be given over to an institute for feeble-minded children. The second child (daughter) became chlorotic at puberty. She suffers now from insomnia, nervous tachycardia, and extreme fatigue on bodily and mental exertion. The youngest child (son), who is mentally rather exceptionally developed, suffered since his seventeenth year from habitual headaches, migraine attacks and insomnia. Now, in his twenty-first year, as he was preparing for examination to the bar, he came down with an outspoken neurasthenia. From the report of the family physician, it is learned that this boy, when he was 1 year old, had a periosteal disease of the left tibia, which cleared up on antiluetic treatment.[56]

CASE 4.—The mother was strong and healthy. The father was infected eight years previously and was now showing the first signs of tabes. The child, boy, aged 3 years, was mentally alert and physically normal. He was unusually irritable and unsteady. He slept very restlessly, falling asleep only long after midnight—and then awakening again to remain awake for hours. Occasionally also he walked in his sleep. Hydrotherapy, sedatives, change of climate, etc., did not help, but potassium iodid began to improve the condition, which has steadily (after three years) become about normal.[57]

CASE 5.—Boy, aged 4 years, was brought to Nonne because he slept restlessly at night and had attacks of fear. The child showed nothing on examination, no signs of rickets, degeneration or lues. History of the father showed syphilis in the latter, ten years previously. Sedatives and tonics gave no relief. Under potassium iodid treatment the immediate improvement was striking.[57]

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STUDY OF A RECENT TYPHOID EPIDEMIC WITH ESPECIAL REFERENCE TO THE USE OF ANTITYPHOID VACCINES

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In spite of the wealth of statistics collected from such reliable sources as the European and United States army reports, considerable difference of opinion exists as to the advisability of giving antityphoid vaccine to persons presumably infected. Wright[1] in his earlier communications emphasized a negative phase directly following administration of vaccines, and advised against their use in the presence of an epidemic. Leishman[2] and others are not positive of the existence of a negative phase and Russell[3] in a recent article insists that a negative phase does not exist. He notes, however, that a single injection of vaccine confers little or no immunity to typhoid fever.

A recent epidemic of typhoid fever at the St. Louis City Hospital offered us further opportunity for study along these lines.

There are, exclusive of patients, about 400 people in the personnel of City Hospital. This epidemic was traced to the kitchen and dining rooms where employees, nurses and doctors were served, so that probably 250 persons were exposed to infection. The total number of cases of typhoid was forty-three, or the percentage one would expect under such circumstances.[4]

Twenty-three cases developed among those who had received no vaccine. The average duration of the disease in these patients was a little under six weeks. There were no very severe cases and no deaths in this series. These cases may, therefore, be considered rather mild.

Twenty patients received one or more doses of vaccine. A summary of these cases may prove of interest.

Dr. A. received three injections of vaccine two years ago. The usual technic of giving 500,000,000, 1,000,000,000 and 1,000,000,000 dead bacilli at intervals of about ten days I presume was followed. The disease in him ran a very mild course. He left the hospital at the end of seventeen days.

Miss H. had three injections, the last on September 13. Her temperature ranged from 99 to 101 for four days beginning September 14. Such a temperature might be expected from a moderate reaction. A few rose spots were in evidence on September 17. Stool cultures, however, contained typhoid bacilli, and up to November 1, the organisms were still present.

Miss J. had three injections of vaccine, the last on August 28. At the time the last injection was given, she complained of headache and malaise. She had a moderate reaction following this injection. She had not recovered, September 2, and was sent to the ward. A blood culture taken the following day contained typhoid bacilli. The stool culture was also positive, as was the Widal reaction. The course of the disease was rather mild at first, but later the patient became very ill. She was discharged October 26.

Miss M. had one injection on August 31, with little discomfort. On September 9, she received a second injection. She had a moderate reaction from which she did not recover and was sent to the ward September 14. The diagnosis of typhoid was confirmed by laboratory findings during the following week. The disease ran a mild course and patient was discharged October 8.

D. S. A. had his second injection on September 8. He did not recover from the reaction, and was sent to the ward, September 14, with a diagnosis of typhoid. The disease in this case was moderately severe. He was discharged October 18.

In E. K., the disease ran a similar course to the preceding following his second injection on September 8. He was discharged October 22. These patients were both well when the second dose of vaccine was given.

Dr. B. had a severe reaction following his first injection on August 27. He had a severe cold at the time, to which his symptoms were in part attributed. On September 3, rose spots appeared and he was sent to the ward. On September 6 he was given a second injection without increasing the severity of his symptoms. His course was of average severity for three weeks, the fever then subsided and reached normal, where it remained for two days. He then suffered a relapse. He was discharged October 23.

55. Nonne's Case 388, Syphilis und Nervensystem, Berlin, 1909.
56. Case of Binswanger's (see his Neurasthenic, Jena, 1896, pp. 55-56).
57. Nonne: Syphilis und Nervensystem, Berlin, 1909, p. 558.

1. Wright, A. E.: On the Results Which Have Been Obtained by Anti-Typhoid Inoculation, Lancet, London, Sept. 6, 1902, p. 654.
2. Leishman, quoted by Russell, F. F.: Antityphoid Vaccination, Am. Jour. Med. Sc., December, 1913, p. 803.
3. Russell, F. F.: Am. Jour. Med. Sc., December, 1913.

4. Two patients developed typhoid in the hospital during August and September. One, a fracture case, convalesced, and the other, a patient with tertiary syphilis, died in the third week. The necropsy protocol stated that death in this last case was due to acute endocarditis and bronchopneumonia, but typhoid ulcers were found in the intestine. These patients were widely separated, and as the infection could not be traced to the same source as the others of this series, they are not included. Neither of these patients received any vaccine.

Dr. S. gave a history of an illness resembling typhoid ten years ago, but decided to take vaccine. He had a moderate reaction following his first injection on September 15. He was at the infirmary at the time, but was sent to the hospital on September 26 with a mild case of typhoid. He was discharged October 19.

Miss M. S. had a moderate reaction following the first injection, but recovered in two days. After the second injection, September 12, she continued to have elevation of temperature and was sent to the ward September 17 with the diagnosis of typhoid fever. She is at present convalescing.

Dr. I. was on vacation from August 16 to September 8 in a locality where there were no known cases of typhoid. On September 10 he took his first injection of vaccine. The reaction was comparatively mild, but elevation of temperature persisted and the case was diagnosed as of typhoid on September 15. The disease ran a severe course with two relapses. He was convalescing at the time this paper was written.

Miss F. M. received one dose of vaccine on September 3. She had a mild reaction lasting two days. She was well for two weeks then had a mild attack of typhoid lasting about seventeen days.

Miss R. received one injection of vaccine on September 3. She had a mild reaction but the temperature ranged between 99 and 101 for five weeks. The Widal reaction as well as blood and stool cultures were negative and she did not develop rose spots. As a positive diagnosis of typhoid could not be made, she is not included in the series.

The remaining nine patients each received one dose of vaccine. All had moderate reactions, which terminated without remission in typhoid. All were of moderate severity, but all recovered.

There was apparently little difference in the severity of the disease in those who received vaccine and in those who did not. Complications were rare, consisting of a few small hemorrhages. There were furuncles in three cases, phlebitis in one case and pyelitis in two cases. Relapse was common, but not severe; five patients in all had temperature above 100 after having been normal for two or more days. Among the nurses and physicians who were directly under my care, rose spots were very pronounced in every case, and four cases developed two or three crops.

Of those who did not develop typhoid, 261 received one or more doses of vaccine, 136, two or more, 14, three doses and 8 had been immunized before August, 1914. The vaccine used was made by Parke, Davis & Co., and consisted of a suspension of dead typhoid bacilli which had been grown on agar slants in a normal salt solution containing 0.5 per cent. of trikresol. This vaccine resembles that used in the United States Army.

It will be noted that practically all vaccine was given between August 28 and September 14, or during the time when all of the cases of typhoid developed. The fact that only 20 of the 261 who received the vaccine developed typhoid speaks against any marked increase of susceptibility and the fact that 20 did develop typhoid is against any marked increase of resistance following recently given vaccine.

The appearance of symptoms directly following injections in so many cases may be explained in at least two ways. These patients were either well along in the stage of incubation when the injections were given, and therefore the vaccination was only an incident which caused them to be watched more closely, or the vaccine, acting as many other foreign substances do, temporarily lowered their resistance and thus precipitated the onset of the disease.

If the latter idea be accepted, it is possible to conceive of a few who, had it not been for this temporary lowering of resistance, might have overcome the infection.

CONCLUSIONS

The use of antityphoid vaccine in persons who are harboring typhoid bacilli does not increase the number of those who develop typhoid.

A single injection, or more, directly preceding or during the incubation period of the disease, does not render the individual immune.

The course of the disease does not seem to be modified by injections of vaccine directly preceding the onset in those who develop typhoid.

The advisability of giving antityphoid vaccine to those presumably infected seems questionable and may in a few instances precipitate an attack.

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CLINICAL OBSERVATIONS ON ASIATIC CHOLERA IN MANILA IN 1914 *

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After an absence of four months, cholera appeared in the city of Manila in July, 1914. The present epidemic, in which there were reported more than 1,100 cases, suspects and "carriers," did not differ greatly from the ordinary small epidemic. All patients, excepting those who died without medical attention, were treated at San Lazaro Hospital.

Of the number mentioned, 330 were genuine cases of cholera, 170 not cholera, and 570 were carriers, so-called; 99 were found dead and sent to San Lazaro morgue for confirmation of diagnosis. The total number of deaths with and without medical attention was 190.

The percentage of recoveries among those receiving medical attention at San Lazaro was 72.5.

When a patient is admitted to the hospital, a stool specimen is at once taken and sent to the Bureau of Science for bacteriologic examination, and no patient is discharged until at least two successive stool specimens taken on different days are reported negative for cholera vibrio.

When a case is beyond doubt clinically cholera, it is carried on the hospital records as cholera, and a case pronounced cholera at necropsy is taken up as such. When a case is merely possible or even probable cholera, either clinically or at necropsy, the final diagnosis depends entirely on the laboratory findings, so that there is little chance for error in the ultimate status of a case. The clinical diagnosis of Asiatic cholera was confirmed bacteriologically in 85 per cent. of the cases.

In reviewing the literature of cholera outbreaks, one notes in almost every epidemic the virulence or violence of the individual infections gradually decreasing as the epidemic lessens. In the present epidemic, it

* Read before the Annual Meeting of the Philippine Islands Medical Association, Manila, Nov. 5, 1914.

is rather suggestive that although the first few patients were violently ill, the decline in the virulence did not follow in the usual manner, it being the rule that for every group of extremely ill patients, there followed immediately a group of less ill patients and then a few who developed but one or two mild symptoms of the disease. This cycle repeated itself throughout the epidemic in too regular a manner to be disregarded. Had these groups of patients come from single neighborhoods, one would at once interpret the sporadic outbreaks as from single sources of infection. This relation of cases, however, could not be determined save in a few instances.

Of the 330 patients treated, 56 per cent. were violently ill on admission to the hospital and demanded emergency treatment. Five per cent. became worse within a few hours after admission and were given emergency treatment. Sixty-one per cent., then, of all patients admitted were extremely ill; the remaining patients, either because of mild infection or the supportive treatment, failed to become very sick.

The diagnosis in most cases presented no difficulty, the symptom-complex of otherwise unexplained diarrhea and vomiting, cramps in the skeletal muscles and suppression of urine being accepted as sufficient for isolation in quarantine.

The clinical diagnosis in children was much more difficult, no reliable history being obtainable and the symptoms being frequently atypical. It was found after carefully examining a number of patients that practically all acutely ill cholera patients slept with their eyes partly opened. In an extremely sick patient, as soon as the cramps were relieved and sleep or coma followed, the postorbital pad being sunken from loss of body fluid, the eyeball rotated slightly upward and the lids remained apart, two-thirds of the pupil frequently remaining visible. With the return of a cramp the eyes would be forcibly closed, then widely opened, and the palpebral aperture would assume its normal size.

Among children acutely ill or even moderately sick, this feature was almost invariably present and was considered, in the border-line cases, as of diagnostic importance.

The present-day treatment of cholera is still in an unsettled state, considerable experimentation going on with vaccines, antitoxins, etc. While undoubtedly the condition of profound collapse existing in a patient with acute cholera is due in a large measure to intoxication, the circulatory disturbance from the loss of body fluids is the most urgent condition requiring relief. The simple administration of antitoxin in this state, unless given in large enough doses to combat the circulatory failure, would in many cases be insufficient to tide the patient over the crisis.

At the onset of this epidemic (and an epidemic could be safely predicted because of the widely scattered sources of the first few cases), it was decided to restrict the routine treatment to the combating of two conditions, namely, the circulatory disturbance from the loss of body fluids, and the nephritis. No attempt was made toward the specific neutralization of toxins, nor was any attempt made to check, by sedatives, the diarrhea or vomiting.

Intravenous injections, without the routine use of cardiac stimulants, constituted the sole means of circulatory support in patients who showed no evidence of previous circulatory disorder. The solution used routinely was composed of 0.45 per cent. sodium chlorid and 0.25 per cent. sodium bicarbonate, introduced slowly through a needle of 0.5 mm. bore directly into the unexposed vein at the rate of about 1 liter in forty-five minutes.

By this method, considerable time was saved in the preliminary introduction of the solution, the rate of flow having but little apparent effect, save that the tendency to cramping was less marked.

The amount of fluid introduced was entirely dependent on the condition of the patient; in the exceptional case, a few hundred cubic centimeters being sufficient, while in others from 10 to 12 liters were given within twenty-four hours. It was found, by giving sufficient solution to bring the blood-pressure nearly to normal, that vomiting and cramps were to a large extent avoided, while if a larger amount were given intravenously, the patient would almost at once have violent abdominal cramps and vomiting.

Usually, the slow introduction of warm solution into the circulation of an acutely ill patient acted as a mild hypnotic, the patient passing into quiet sleep, awaking only to ask for water. Repeated injections of the solution were made into the same vein, with almost no pain and no infections.

Contrary to expectation, the introduction of a needle into the collapsed vein of a cholera patient presents little difficulty. The vein appears as a blue line beneath the skin, and by the sense of touch one penetrates it, skill being easily acquired.

The vein usually selected for injection was the median cubital; occasionally it became necessary to use one of the dorsal veins of the foot or of the fingers, and more rarely the jugular.

The apparently good results obtained from the slow, frequent, intravenous injections suggested the desirability of continuous proctoclysis as a means of supplying fluid. This method was tried in a few children in the first 100 cases and in all subsequent patients in whose cases there had been a loss of body fluid. In the case of average severity, the introduction of fluid by proctoclysis was sufficient to cause the pulse to return to normal in from eight to twelve hours. In the more severe types, intravenous injections were given to tide the patient over the crisis. The solution was always given at slightly above body temperature by keeping hot water bottles over the rectal tubes and, while the introduction of fluid in this manner increased the number of stools, the patients appeared to receive considerable comfort from the warm solution.

Before the introduction of proctoclysis as a routine measure, a number of cases of the cholera sicca type were admitted to the wards. These patients almost always died in spite of the numerous intravenous injections. At necropsy, the small intestines of these patients were found to be filled with fluid, while the large intestines were comparatively free. Later when such cases were admitted they were given routinely a large enema and continuous proctoclysis, the solution running in a small stream rather than in drops. At the same time the circulation was supported by intravenous injections. Usually, these patients responded in an hour or so with copious stools and, having mechanically purged themselves, began to show signs of recovery; the rapid proctoclysis having emptied the small intestines, seemingly by siphonage.

Acute nephritis, the most common and most feared sequel of cholera, was rather frequent in the first hundred cases treated. In subsequent cases, reestablish-

ment of kidney function was much quicker, perhaps because the continual lavage of the large intestine aided the elimination of toxic materials without the loss of body fluid.

In the first hundred cases, in which proctoclysis was rarely used, 76 patients had suppression of urine, 13 for seventy-two hours or longer, 9 of whom developed uremia with seven deaths.

In the second hundred cases with proctoclysis, 69 patients had suppression of urine, 9 for seventy-two hours or longer; 3 developed uremia, 2 of whom died, both being uremic on admission.

In the third hundred cases, 70 patients had suppression of urine, 9 for seventy-two hours or longer; 3 developed uremia and died.

It is interesting to note, in passing, that one patient had complete suppression of urine for 144 hours, having had during this time continuous proctoclysis. The longest time of complete suppression with recovery was ninety-six hours.

In attempting to demonstrate the value of continuous proctoclysis as an aid to kidney elimination, a number of cases were selected which had suppression of urine after the acute choleraic symptoms had subsided. Proctoclysis was used in these cases until the return of kidney function was evidenced by the voiding of two or three hundred c.c. of urine, and at this stage the proctoclysis was discontinued. Within a few hours there would be noted in such cases a distinct decline in the urinary output, as well as a progressive restlessness and flushing of the cheeks. Proctoclysis was then renewed, and within a few hours, urine would be excreted in nearly normal amounts, patients voiding, when encouraged, every hour. This procedure was repeated sufficiently often to demonstrate, apparently at least, the value of continuous proctoclysis in all cholera cases until there is complete return of normal renal function.

The routine use of hot-water bags to maintain body temperature was discontinued after much deliberation. Since the low body temperature in cholera patients is due almost solely to circulatory depletion and not to thermogenic irregularities, the judicious introduction of solution intravenously at about 39 C. (102.2 F.) speedily causes the skin to return to a more nearly normal temperature, the subsequent surface temperature, together with the pulse, being important indexes of the need of intravenous injections.

On analysis of the clinical records of 330 cases, a number of interesting facts were found. The appearance of the disease, as would be expected, was most frequent among the Filipinos, there being 303 cases. Among the Japanese there were 12 cases, for the most part in fishermen, whose hygienic surroundings are notoriously poor. Ten Americans were infected, one of whom died of uremia. Two Germans, one Italian, one Indian and one Chinese were also infected.

The distribution among the sexes was unequal, 36 per cent. being females.

The occurrence of the disease with reference to age was as follows:

Between 1 and 4 years occurred 12 per cent. of the cases, the mortality being 50 per cent.

Between 5 and 14 years occurred 9 per cent. of the cases, the mortality being 29 per cent.

Between 15 and 39 years occurred 62 per cent. of the cases, the mortality being 22 per cent.

Between 40 and 76 years occurred 17 per cent. of the cases, the mortality being 42 per cent.

The youngest patient, a baby girl of 2 months, recovered, her mother having died of cholera. The oldest patient, a woman of 76, died.

Thirty-four per cent. of the patients received intravenous injections, the average amount being 2.5 liters. Thirty-nine per cent. of the cases received proctoclysis alone.

The average total time of illness among the patients who died in the hospital was seventy-two hours; of this the average time of illness previous to admission to the hospital was seventeen hours.

The average time of convalescence, which comprehends the complete disappearance of all symptoms and two consecutive negative stool examinations on separate days, was thirteen days.

The commonest complication met was bronchopneumonia, nearly all the children between the ages of 1 and 4 years who died after the acute choleraic symptoms passed succumbing to this condition.

Acute parotitis was seen in three cases and acute arthritis in one case. Chronic morphinism was the causative factor in the death of one patient who passed safely through the acute stages of cholera, but whose kidneys failed to functionate, death from uremia following.

Among women, a large percentage of whom were pregnant, three were delivered, nearly at term, of dead fetuses and recovered; a fourth died in the acute stages of cholera; a post-mortem cesarean section delivered a dead full-term fetus. Two patients aborted at about the third month and recovered; a third aborted previous to admission to the hospital, attended by a midwife, and recovered after passing through a severe choleraic infection, together with puerperal sepsis.

Aside from the isolation of cholera cases and the disinfection of infected houses, the efforts of the bureau of health to control the epidemic were, to a large extent, directed toward the isolation and quarantining of vibrio carriers. As soon as a case of suspected cholera was isolated at San Lazaro, the stools of all the members of the household were examined bacteriologically at the Bureau of Science, and persons found to harbor cholera vibrios were sent to San Lazaro and placed in quarantine.

In all, 570 persons, regardless of social standing, were isolated. These persons as a rule submitted to the confinement cheerfully, although not infrequently the bread-winner of the family was quarantined.

The "carriers" were confined to the hospital until at least two consecutive negative stool specimens were obtained on separate days. The average time required was seven days; the longest time in which vibrios were found was forty days. As a routine measure, a saline cathartic was administered on admission; subsequently salol in 0.6 gm. doses was administered three times daily.

Undoubtedly this isolation of vibrio carriers plays an important part in the controlling of an epidemic; we believe that clinical cholera may be spread from person to person, yet it is difficult to understand why more of these known carriers do not develop cholera. Much more must depend on the virulence of the vibrio than on the resistance of the individual, an instance in this hospital during the present epidemic appearing to demonstrate this.

July 18, R. A. was admitted to the tuberculosis pavilion. From the time of his admission until July 28, he averaged six stools daily; the character, soft and mucoid, with small

amounts of blood, suggested the persistent diarrhea seen occasionally in tuberculous patients. July 28, he had eight stools of the same character; a careful examination failed to show the presence of entamebas and, as a precautionary measure, a bacteriologic examination for cholera was made, the patient in the meantime being isolated from the other patients.

In the evening of July 25, D. D. was admitted to the same ward; the next day he had one normal stool; on the following day, July 27, he had nine stools, soft, yellow and without blood or mucus. July 28, he had seven stools of the same character; examination of the stools failed to show entamebas; this patient, too, was isolated and examined for the cholera vibrio.

The specimens from R. A. and D. D. were reported by the Bureau of Science on the 31st as positive for the cholera vibrio. In the fear that the infection might spread through the ward with serious consequences, specimens were taken from all the patients in the ward.

August 3, twelve of these patients were reported as positive and were isolated. On the 6th, specimens were taken from the remaining presumably non-infected patients and four new infections were found. On the 8th, no new infections were detected, while on the 10th, five previously negative patients were found to be carriers and were isolated. In all, twenty-three patients were found to harbor the cholera vibrio in a ward of thirty-two patients.

While neither of these patients, R. A. and D. D., developed a single symptom of cholera aside from the diarrhea, it seems reasonable to assume that they represent the mildest manifestations of the disease. Certain it is that their body resistance was at a minimum; the tuberculous patients admitted to the wards of San Lazaro Hospital are almost always *in extremis*, their vitality is extremely low; usually they are the ones refused admission at other hospitals.

In addition to the foregoing cases, one other patient developed symptoms of possible effect from the infection:

C. M., admitted May 22, was usually somewhat constipated; August 3 and 4 he had no stools, on the 5th he had three normal stools, on the 6th, the day he was found to be a carrier, he had four stools, soft and brownish. On the 7th he had twelve stools, for the first time watery; on the 8th, the day of his death, he had three soft yellow stools. This patient developed no symptoms of cholera other than the diarrhea, and died from gradual cessation of respiration. Nearly all of the twenty-three patients found to be infected died of tuberculosis and five of these were examined by necropsy. R. A., the first patient found to be infected, died two days after the detection of the infection. No anatomic evidence of cholera was found at necropsy, the gross pathologic diagnosis being generalized tuberculosis. A culture taken from the small intestine failed to show the presence of the cholera vibrio.

D. D., the second patient found to be infected, died nine days after the detection of the infection. At necropsy, there was found a slight injection of the mucosa of the duodenum, with no other lesion suggestive of cholera. The anatomic diagnosis, as in the previous case, was generalized tuberculosis. The culture taken from the small intestine was positive for the cholera vibrio. Three other patients failed to show gross anatomic evidence of cholera, two of them, however, being positive for vibrio from intestinal culture.

Of nearly 600 vibrio carriers quarantined in San Lazaro, but one patient developed true clinical cholera:

L. Z., a Filipino woman aged 40, admitted to the tuberculosis department July 11, 1914, was allowed to leave the hospital for twenty-four hours, September 6, to visit her relatives. On her return to the wards she was isolated from the other patients and a stool specimen taken for bacteriologic examination; this specimen was reported positive for the cholera vibrio, and she was at once removed to quarantine. From September 6 to September 21, she was in her usual fair physical condition. September 22, after being a known vibrio carrier for sixteen days, she began having watery stools, six in the first twenty-four hours, but with no other complaint. Twenty-four hours later she was having copious watery stools and began vomiting for the first time. September 24 she complained of chest pains of indefinite character, violent cramps in the skeletal muscles, copious vomiting and frequent painless watery stools, and had complete suppression of urine; she was for the first time confined to bed and was given continuous proctoclysis with no other treatment.

September 24 she had 16 stools and there was no urine.
September 25 she had 17 stools and 390 c.c. of urine.
September 26 she had 9 stools and 960 c.c. of urine.
September 27 she had 7 stools and 860 c.c. of urine.
September 28 she had 3 stools and the urine was normal, the general condition good, and recovery was uneventful.

CONCLUSIONS

1. The epidemic was of about the usual severity.
2. The epidemic was composed of a number of small sporadic outbreaks.
3. The sources of infection were multiple.
4. The slow introduction of solution intravenously is the more beneficial method.
5. Continuous proctoclysis is a valuable aid in treatment.
6. Cholera vibrio carriers are not only a public menace, but are themselves in danger of contracting cholera.

A PSYCHOSIS OF SEVENTEEN YEARS' DURATION WITH RECOVERY*

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The following case is unusually interesting, chiefly by virtue of its long duration—almost seventeen years; the presence of a clinical picture commonly associated with dementia; the eventual recovery. The first two features, namely, the duration and the symptom complex, are difficult to explain when viewed in the light of the unexpected and favorable outcome. The possibility of a retrospective diagnosis is also to be considered.

The clinical history is based on the case notes, which are to some extent supplemented and amplified by personal recollections of various members of the patient's family and of the nurse who attended her during many years of her illness.

REPORT OF CASE

Clinical History.—A. R., a woman aged 41, of American parentage, was admitted to the hospital in 1897, in her twenty-fourth year. She was the youngest of seven children. Her oldest sister died insane. The mother, brothers, sisters and the patient herself are all subject to nervous headaches.

Personal History.—The patient attended parochial and later public schools, until her sixteenth year. She was at least an average scholar, and reached the senior grammar grade. In disposition she was cheerful, sociable, and self-sacrificing. She married at 21 and had three children during the following four years. The death of the second child, a month preceding the birth of the third, was said to have made a profound impression on her. The third child was born after an extremely difficult and protracted labor, which, however, was non-instrumental. She sustained severe lacera-

* Read before the Philadelphia Psychiatrical Society at its Annual Meeting at the College of Physicians and Surgeons, Jan. 8, 1915.

tions[1] and following it she was said to have developed "blood poisoning."

When admitted four months later she was much reduced physically—weighed only 70 pounds—and her limbs were so contracted that "her knees touched her chin." (At present the patient has a decided stoop and rounded shoulders.) Her mental state during the first three months at the hospital was marked by restlessness, confusion and incoherence. There was a distinct febrile reaction extending over a period of two months.

Summarizing her mental condition during her hospital residence, it would appear that for the first ten years she was confused and stuporous, completely disoriented, never responded to questions, and was extremely filthy in her habits. The first three years of this period were spent in bed and nourishment was accomplished solely by artificial means. From the tenth to the fifteenth year there were alternating periods of violence and depression. Though she was still an untidy, apparently demented patient, yet there was a decided improvement, for in the thirteenth year she began to converse, but with a tendency to mimicry. To some degree she developed an interest in her surroundings; began to do a little embroidery and succeeded in partially orienting herself. During the past two years there has been some childishness in behavior, with irregular intervals of mild depression, but this cleared up fairly rapidly, and eight months ago she was considered well enough to go home on a trial visit. Since that time she has remained apparently normal.

Present Mental Status.—At present she is a voluntary patient; her mental state would not justify detention on the old commitment papers. She is perfectly clear and alert, neat and tidy in appearance, interested in her environment, and does remarkable embroidery and fancy sewing. Her memory for events which preceded and followed her illness is intact.

Concerning the illness itself, there is an almost complete amnesia for the first ten years; for later occurrences there are here and there fragmentary recollections. There is perhaps some blunting of the general intelligence, which might easily be accounted for by such a long absence and complete dissociation from current events and progress. Our feeling is that this restriction in one field is perhaps no greater than would be noted in any person who for at least ten years had been completely severed from all human intercourse and interests.

Certainly those mental attributes which one would ordinarily expect to show some ill effects and deficiencies after such a long drawn out exhaustive process are not at all affected. Attention, memory, orientation, and the emotional reactions are not disturbed. The residual mental timidity will doubtless be overcome and the narrowing of the conceptive faculty eventually be expanded by the birth of new interests. The reeducation which will result from once more living in a world peopled by normal beings should remove even the traces of her unusual experience.

It must be mentioned that on several recent visits to her home she has, in the opinion of relatives, "not done well." They inform us that unless her wishes were acceded to she would retaliate with a more or less childish attitude and behavior.

The patient herself feels that her family regarded her as childish and inefficient; prevented her doing even the simplest things and constantly distrusted her judgment even in ordinary matters. However, her reactions at both this and a general hospital, where she recently underwent a surgical operation, have been normal; so much so that her stay with us is now entirely a matter of volition and should she definitely ask for a discharge, her request would be granted.

Physical Examination.—At present the patient is well nourished and active; weighing 146 pounds. There is a double mitral murmur which is well compensated. Slight enlargement and retroversion of the uterus exists, with moderate leukorrhea. A cervical polyp has recently been removed. Both ring fingers show symmetrical contractures and the terminal phalanges cannot be extended. (The patient has been told that these deformities resulted from constantly sitting on her hands.)

Urine: Specific gravity 1.030, many leukocytes, epithelial cells and mucous shreds. Neither albumin nor sugar.

Blood: Red blood cells, 3,495,000; hemoglobin, 89 per cent.; white blood cells, 7,833.

Blood Pressure: Systolic, 118; diastolic, 80; pulse pressure, 38.

Wassermann: Negative.

1. Gynecologic examination three years after admission revealed a perineal laceration from vagina to rectum, and a slight cervical tear.

COMMENT

We have, then, a woman now in early middle life, who, after passing through a tedious mental illness embracing more than one-half of the third, the entire fourth, and extending into the fifth decade of her life, during the greater portion of which she exhibited a symptom complex which led to her being classified as hopelessly demented, seems finally to have experienced complete mental restoration.

DIFFERENTIAL DIAGNOSIS

Before considering the question of attempting to establish a diagnosis at this late date, I would like to digress for a few moments. The classification of mental disease is admittedly inexact and incomplete. That this is so is clearly proved by the fact that new subgroups are constantly being split off from what were formerly believed to be clinical entities. The larger number of cases fall more or less naturally into the existing classification, but there remains a not inconsiderable group which will not fit. These "clinical misfits" are usually appended to some known group and labelled "allied to"; it would perhaps be more desirable to permit them to stand merely as cases presenting a certain group of symptoms with the hope that further clinical investigation will clear up their complexities. The reported case appears to be of this character, and the retrospective diagnosis is gone into merely as a matter of speculative interest.

Manic-Depressive Psychosis.—The ten years during which she was described as being disoriented, confused and stuporous, seem to place her unquestionably outside the manic-depressive group. Any definite emotional reaction—breaking into the monotony of a practically vegetative existence—would certainly have been noted and recorded. Again, her later violence and excitements appear to have been largely purposeless, suggesting Kraepelin's subpraecox group, the periodic type, rather than a frank maniacal phase. The favorable outcome which might be adduced as pointing to an emotional disorder seems to be entirely outweighed by the clinical evidence.

Dementia Praecox.—This classification might perhaps be made to measure up to the symptoms, but could hardly in this case be made to cover the result, namely, recovery. There is still considerable diversity of opinion regarding the essential nature of the pathologic process in praecox. Many alienists question the validity of "recovery" even in a recent case, and insist on some grade of dementia as an implied and necessary requirement for final diagnosis—in fact, they believe that this constitutes the clinical basis of the disease. Dementia is here interpreted in its strictest sense, that is, a definite mental subtraction involving permanent

deterioration in one or more fields. Those who maintain that recovery is not all incompatible with praecox, apply their theory only to the fairly recent case—the one in which the symptom complex is merely highly suggestive, and the diagnosis very largely a matter of individual opinion. In a psychosis of seventeen years' duration, terminating in a recovery, this diagnosis is practically impossible from either point of view.

Infective-Exhaustive Psychosis—Etiology.—There are certain factors which suggest an infective-exhaustive psychosis. A young woman bearing three children within the comparatively short period of four years—the final labor being extremely difficult and protracted and resulting in extensive laceration—must be regarded as being in a state of greatly lowered vitality, an easy victim for some infectious process. Immediately after there was "blood poisoning" (septicemia?). Adding to this pathologic array, the psychic factor of the death of her second child, and considering the fact that we are here dealing with a nervous organization whose resistance is probably less than normal (hereditary?—one sister insane), we would seem to have sufficient physical and psychic trauma to precipitate even an unusually severe mental disturbance. That there was a definite febrile process is clearly evidenced by the clinical chart.

This was originally believed to represent an atypical enteric fever, but we are now inclined to think it was probably the reaction to a puerperal infection. The temperature curve was irregular and the pulse rate comparatively high. The disease may be prolonged for months and the temperature curve is irregular (Osler). Our patient has a double mitral murmur. This, of course, may have been present from childhood or may have developed much later in life—and there may indeed be no connection between it and the supposed septicemic process. It is also perfectly compatible with typhoid fever. However, the following sequence seems to be the most natural and logical one.

1. The lacerated and devitalized pelvic tissues acted as an open portal for bacterial invasion.

2. Bacterial infection did occur and gave rise to a septicemia.

3. The toxins of this disease left a permanent effect on the heart valve. It might be added that our patient did not suffer from any of the diseases of childhood, which are most likely to have valvular disease as a sequel, and that endocardial involvement is perhaps somewhat more frequent in septicemia than in other infections.

Unfortunately we have but meager information relative to our patient's condition at home during the four months' period previous to her hospital admission. We know that she had been restless at night, talking loudly and incoherently, and refusing food. At any rate there seems to have been a more or less definite demarcation between this early active stage of from four to six months' duration, and a later period of stuporous confusion lasting many years. The possibility of an acute confusional insanity, *die akute Verwirrtheit* (amentia) of Kraepelin gradually merging into an exhaustive state, is at least to be thought of. Kraepelin recognizes this possibility. Speaking of acute confusional insanity he says: "In the rarer cases of longer duration (more than two to six months) we must consider the development of an infective-exhaustive state."

SYMPTOM COMPLEX

A review of the later symptom complex presented leaves the impression of confusion and stupor as basic symptomatic elements. On such a foundation the detailed clinical structure can be most naturally erected. Disorientation, physical lethargy, and later purposeless motor activity, refusal of, or rather indifference toward food, idea and word poverty, untidiness, in fact complete neglect of personal needs, all strongly suggest either a permanently injured or a very deeply clouded brain. Similar symptoms are frequently noted in deeply exhausted mental states. Again, lack of, or at best very tardy and partial, insight separates the infective-exhaustive group from psychoses in which there is a definite emotional reaction.

DURATION

The duration in this case is longer than any I have been able to find in the literature. In the recent edition of Kraepelin's *Psychiatry* (Ed. 8, ii), under a general grouping of the infectious insanities, the author further classifies (*a*) the febrile deliriums; (*b*) the infectious deliriums; (*c*) acute confusional insanity, and finally (*d*) the infective-exhaustive type. Under this last heading he describes a group of cases, varying in severity and merging with one another clinically, due to toxins operating primarily or secondarily, whose effects may be exerted over long periods of time. In the severest cases there is practically a cessation of psychic life. At the onset there may be a confused, depressed mental state with perhaps anxiety, persecutory ideas, feeling of personal unworthiness, visual and auditory hallucinosis. This is succeeded by a clouded mentality embracing inattention, memory loss, poverty of thought, disorientation, and a general blunting in the intellectual spheres.

Though there are wide variations in the clinical pictures, the patients for the greater part are passive rather than active or resistive, are usually bed-ridden, speak rarely, and in fact may be mute, refuse all nourishment and must be fed, neglect their personal needs and are filthy. There are often disturbed obstinate and incoherent periods, and childishness and playfulness may develop. Duration is a matter of many months, but about 50 per cent. show, coincidently with a gain in body weight, a general mental improvement. They become brighter and more approachable, exhibit awakening interest in their surroundings, begin to occupy themselves. There usually remains, however, a long period during which increased sense of fatigue, defective memory, irritability and emotional uncertainty are manifested. The ultimate outcome is recovery. Corresponding to this picture, Tanzi, in his textbook of mental diseases, classifies the more profound exhaustive states under the name of *"amentia attonita."* The diagnosis rests on a state of "inactive stupor without emotions or memory." The author feels that in some of these cases a differential diagnosis from dementia praecox is impossible during the course of the psychosis, and that the clinical riddle can only be read in the light of the favorable result. The complete emotional indifference which Tanzi regards as the predominating factor is explained by "a suspension of the processes of perception and representation." The perceptions are so deformed and the mental images so contradictory and interfere with each other to such an extent that the psychic processes

become distorted and chaotic. "Feeling remains starved for want of food—that is to say, from lack of images and ideas; the will is paralyzed from want of motives."

Both of these authorities and also other investigators concede to the infective-exhaustive group the possibility of an extremely tedious course. The cases which came under their observation have, however, been a matter of many months rather than of many years.

Without regard to its other features, the case reported, by reason of its unusual duration and the remarkable outcome, seems entitled to rank as a psychiatric curiosity.

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USE OF THE DIRECT VISION CYSTOSCOPE WITH WATER DILATATION FOR PROCTOSCOPIC EXAMINATIONS

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Examination of the rectum and lower sigmoid by some method which permits of visual inspection of their interior is a diagnostic procedure of the first class. Tubular specula have been utilized for such examinations for many years. In the lateral position they permit of the inspection of a limited area of the mucous membrane which presents at the distal end while the instrument is being withdrawn. In a normal case, the tube may usually be introduced for a considerable distance with comparative ease; but the presence of those pathologic conditions most demanding investigation very frequently adds such technical difficulties or even dangers to this procedure as largely to destroy its value.

The introduction of the principle of atmospheric inflation in rectal work by Van Buren and by Kelly was a great advance, and has constituted the essential feature in modern proctoscopy. Under favorable conditions this method allows of very satisfactory examination of the lower bowel. The exaggerated knee-chest position is, however, not only difficult to maintain, but it is so objectionable to most patients that the average surgeon for the latter reason alone fails to make many proctoscopic examinations which he knows should be made. Also, with this method, as with the method first mentioned, serious technical difficulties are often encountered in the presence of those very pathologic conditions most demanding accurate investigation.

The advantages of a satisfactory means of examining the lower bowel with the patient in the ordinary lithotomy or cystoscopic position instead of in the knee-chest position and using an instrument five-sixteenths inch instead of seven-eighths or 1¼ inches in diameter are self evident.

During the past two years I have used a simple, direct vision, water medium cystoscope of the Elsner-Braasch type for examinations of the rectum and lower sigmoid, and this method has proved entirely satisfactory in practically all cases. It is as painless as an ordinary enema, even less so, for it is never necessary to fill the bowel completely with the water. The patient is not kept in an uncomfortable position, and it is not necessary to expose even the genitalia during the examination. The details of the mucosa are much clearer when seen through a homogeneous water medium than they are when the wet and often slimy mucosa is viewed through an air medium, and there is no reflected glare when artificial light is being used.

Particles of mucus and feces do not make the examining medium turbid, and when they are in the line of vision they can be readily washed away by the irrigating fluid. Under the guidance of the eye, and without the possibility of danger, the beak of the cystoscope may be guided past mucous folds or even tumor growths until the entire length (8 inches) of the cystoscope has been introduced. The normal relationships of the bowel are scarcely, or not at all, disturbed. Ulcers, fistulous openings, diverticuli, and papillomatous and other tumor growths may be viewed with the same ease and accuracy as in cystoscopic examinations. The technic is almost exactly the same as for the use of the direct vision cystoscope in bladder work.

The first case in which I employed this method was one of carcinoma involving the rectovaginal septum. In this patient, the usual proctoscopic examination seemed out of the question; but after an examination of the bladder for a suspected involvement, the cystoscope was introduced into the rectum in the hopes of getting a partial view of the involvement of this region. I was surprised to find that the view was quite as good as that obtained in the bladder, that particles of feces did not make the medium turbid, that whenever the bowel became distended the fluid could be withdrawn just as in bladder examinations, and that by guiding the instrument with the eye, the beak could be made to pass one and then another of the mucous folds until the entire length of the cystoscope had been introduced, after which a good view of the bowel could be obtained as far up as the illumination would carry. All of this was accomplished with even less discomfort to the patient than had been caused by the preceding cystoscopic examination.

Since this first experience, the cystoscopic method of examining rectal cases has been used with increasing frequency until, at present in my own work proctoscopy by means of a direct vision cystoscope has come to bear about the same relation to the knee-chest proctoscopy as does cystoscopy by water dilatation to the Kelly method of examining the bladder under atmospheric dilatation.

This method is not intended to supplant the standard procedures now commonly employed in proctoscopy. I believe, however, that it is a valuable addition to the means now usually employed, because it is entirely painless, it does not require undue exposure or a position repugnant to the patient, and in many cases, especially those with some real pathologic condition, the view obtained is actually superior to that procured by any other method.

For this work, the simple, direct vision cystoscope of the Elsner-Braasch type is preferable to the more complicated telescopic instruments. It requires only enough fluid to separate the surfaces to be observed and gives a view free from distortion; there are no lenses to become soiled by fecal matter, and turbidity, even that due to hemorrhage, does not obscure the view if fresh fluid is flowing through the instrument.

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Before the examination, the patient should evacuate the lower bowel, preferably by means of an enema. If fecal particles remain, they may be washed away by the irrigating fluid. I use plain water at room temperature. Whenever this becomes turbid or the patient complains of a sense of fulness, the fluid is drained off through the cystoscope exactly as in irrigating the bladder. The total amount of fluid used is seldom half that of the ordinary enema.

In my experience this simple method of proctoscopy has proved so satisfactory and free from discomfort to the patient that with it many examinations have been made which otherwise would probably have been neglected.

A Case of Pachymeningitis Hemorrhagica Interna, with Positive Wassermann Reaction.—The literature mentions syphilis as an occasional cause of hemorrhage from the meninges (Oppenheim, Beck and Hahn). In this connection the following case is interesting. It would also seem to be unusual because of the youth of the patient and the absence of other signs of syphilis, acquired or hereditary.

History.—The patient was a Russian girl, aged 16, well nourished and without history of any previous illness. The only feature in her family history worthy of note is the fact of her father's death from esophageal varix. The patient's illness was of sudden onset, three days before admission to hospital, with severe headache and an irregular fever; the headache being at the base of the skull and persistent. Rigidity of the head and neck accompanied the first symptom. The patient was hurriedly sent to the hospital three days after the onset because of being in a semidelirious, semicomatose condition.

Examination.—The girl was unconscious, moaning and resisting when handled, otherwise lying in a constrained posture with facial expression of pain. The pupils were dilated and reacted poorly to light; the fundi showed no change. There was a marked degree of rigidity of the muscles of the neck; none of the limbs. Hyperesthesia was general, the patient crying out and resisting whenever handled. The knee-jerks were diminished. Temperature 100 to 101 F. Pulse 90 to 100. Respirations 26. Blood examination showed a leukocytosis of 21,000. Lumbar puncture on two occasions produced a serosanguineous fluid, without clotting, and showing on microscopic examination numerous red blood cells. The fluid was under increased pressure. Blood-Wassermann test positive.

In the course of a week the patient gradually became less rigid, less sensitive to external stimuli and each day more attentive to her surroundings. Her recovery was more rapid after a profuse bleeding from the nose. On recovery there was amnesia for the period of her acute symptoms; otherwise no mental residuals. A month later the patient appeared in excellent health.—HAROLD W. WRIGHT, M.D., Santa Barbara, Cal.

Public Responsibility and Tuberculosis.—In all talks to laymen the health officer should try to imbue his hearers with his own enthusiasm and devotion to the tuberculosis cause. He should tell them that tuberculosis is not merely a medical disease, but that it has a very large social aspect. Bad housing, overcrowding, dangerous congestion, and even underfeeding exist, alas, not only in our large cities, but also in smaller communities. Wealthy and influential citizens should be shown what great good they can accomplish by becoming interested in the amelioration of such conditions as are conducive to the spread of tuberculosis. They will themselves benefit in the end from a clean and healthy community. Personal service to the consumptive poor, and kind, generous, and considerate actions toward those afflicted with tuberculosis, rich and poor alike, will create a better and more helpful feeling throughout the community.—S. Adolphus Knopf, *Public Health Reports*, Dec. 18, 1914.

Special Article

PRACTICAL PHARMACOLOGY

(*Continued from page 1073*)

XIII

ANTISEPTICS AND DISINFECTANTS

DERIVATIVES OF BENZENE—(*Continued*)

THERAPEUTIC USES

One part of phenol in five hundred or a thousand parts of water is actively antiseptic for most of the common pathogenic bacteria, and a 1 per cent. solution is actively germicidal for nearly all of the nonsporulating forms, destroying them in a few minutes at ordinary temperatures. Anthrax spores, however, are not destroyed by a 5 per cent. solution in twenty-four hours.

Phenol is applied to the skin in dilute solution or preferably as an ointment to relieve itching as in piles. It is also useful as an application to small painful ulcers. The statement is often made that the pain of burns is increased by phenol, but such increase of pain is transient and an anesthetic action is then obtained. Phenol cannot be applied to large surfaces because of the danger of absorption.

It is often used as an antiseptic in the form of gargles and mouth-washes, but in most cases it can have little value as an antiseptic. Any benefit derived must be due to the allaying of irritation and the cleansing of surfaces, for phenol cannot be kept in contact with the bacteria long enough to have any important influence on their multiplication.

It is said to be of some value in vomiting. This is probably explained by its capacity for lessening the irritability of the gastric mucous membrane, by its anesthetic action. In that case it can have little more than momentary value. It has been used to relieve gastric fermentation, but it is not recommended for this purpose.

The antiseptic and disinfectant uses of many of the agents which have been discussed require no further consideration. Salicylic acid, the salicylates, including salol and aspirin, and the other derivatives of salicylic acid, are used widely for the relief of joint symptoms in articular rheumatism, and for the reduction of fever which attends that condition. Salicylic acid has no influence on the endocarditis that accompanies rheumatism so frequently, however, and, as previously stated, it does not prevent the recurrence of the rheumatic attacks.

The salicylates afford relief in rheumatism only while medication is continued. They are used for the relief of headache and other neuralgic affections, in chorea, in tonsillitis and in various catarrhal inflammations.

The salicylates cause some increase in the excretion of uric acid. For this reason, perhaps, they have been used in gout, but they are of little value in that condition. There is no evidence that any slight influence which they may have on the secretion of bile is of value in the treatment of constipation. Sodium salicylate is said to be useful in certain conditions of the eye, including iritis, keratitis and glaucoma.

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* This is the thirteenth of a series of articles on useful drugs—on practical pharmacology for the general practitioner. As soon as completed, these articles, elaborated by additional subjects, will be published in book form.

The caustic action of salicylic acid is utilized for the removal of corns and calluses.

Large doses of the salicylates are contra-indicated late in the course of pregnancy because of their tendency to produce abortion.

Phenyl salicylate, or salol, is said to have an especial field of usefulness as an antiseptic in diarrhea and enteritis.

Its comparative insolubility in the gastric contents has led to its employment for coating pills intended to pass through the stomach and dissolve in the intestine, but the amount required to coat one or two large pills constitutes very nearly a full therapeutic dose.

DOSAGE

Phenol is crystalline at room temperature, and owing to the inconvenience of handling it, the liquefied phenol is usually employed. The dose of the liquefied phenol is 0.05 c.c. (1 minim), corresponding to about 0.04 c.c. (4/5 grain) of the crystalline.

Salicylic acid is seldom administered as such internally, sodium salicylate being commonly employed, or methyl salicylate (oil of sweet birch or oil of wintergreen) or aspirin may be used.

Methyl salicylate and sodium salicylate are usually given in doses of 1 gm. (15 grains), which may be repeated every hour or every two hours until the maximum permissible amount is given. This is indicated by ringing in the ears, perhaps some dizziness, and occasionally some slight mental disturbance such as confusion.

About 6 to 8 gm. (90 to 120 grains) are usually required to induce the symptoms indicative of the limits of tolerance, but if the larger amount fails to induce the usual symptoms, the dose may be given less frequently, or a smaller dose every two hours. After the symptoms appear the administration is usually limited to about three doses per day.

For headache and neuralgia much smaller amounts are employed, 1 gm. (15 grains) being usually sufficient.

Phenyl salicylate, or salol, is given in smaller amounts than is sodium salicylate because of the danger of phenol poisoning from such large doses. For whatever purpose salol is used, the dose should not usually exceed 0.5 gm. (8 grains).

Aspirin, or acetylsalicylic acid, is given in somewhat smaller doses than is sodium salicylate in the treatment of rheumatism, the symptoms which indicate the limits of dosage being the same as with sodium salicylate.

It is given in doses of 0.3 gm. (5 grains) for the relief of headache.

Benzoates might be given in larger doses than the salicylates were there any occasion to administer them internally.

Cresol is not often used internally, but the dose is said to be 0.05 c.c. (1 minim).

Creosote is given in doses of 0.2 c.c. (3 minims) three times daily, but it should be discontinued when it disturbs the appetite and digestion.

Guaiacol is given in doses of 0.1 c.c. (1½ minims) in an emulsion or dissolved in a bland oil contained in capsules, and if this dose is borne without disturbance it may be increased cautiously to 0.6 c.c. (10 minims). The carbonate of guaiacol may be given more boldly, since it is inactive until it is decomposed, the dose being 1 gm. (15 grains). It is incompatible with alkaline hydroxid.

The dose of thymol for ordinary purposes is said to be 0.1 gm. (1½ grains), but in the treatment of hookworm disease, it must be used more boldly as follows: For children under 5 years, the fine powder is given in doses of 0.5 gm. (8 grains); from 5 to 10 years, 1 gm. (15 grains); from 10 to 15 years, 1.5 gm. (22 grains); from 15 to 20 years, 2 gm. (30 grains); and over 20 years, 3 to 4 gm. (45 to 60 grains).

It is especially necessary to prevent its absorption when such large doses are used; hence oils and fats should be avoided in the diet.

Betanaphthol is used in doses of 0.1 to 0.3 gm. (1½ to 5 grains).

If the intestinal contents measure as much as 4 liters, the larger dose mentioned above would constitute a dilution of one part of betanaphthol in about thirteen thousand parts of the contents—a dilution in which its antiseptic action is extremely feeble at best. Such a dose probably has little antiseptic action beyond the small intestine.

Betanaphthol is sometimes used externally in the form of an ointment.

MATERIA MEDICA *

Sodii Salicylas.—Sodium Salicylate, U. S. P.

Sodium salicylate occurs as white pearly scales or as an amorphous powder; the commercial product usually has a slight buff or pink tinge. It is odorless and has a sweetish taste. It is very soluble (1:0.8) in water and freely soluble (1:5.5) in alcohol. Sodium salicylate is preferably administered in solution or in gelatin capsules. The widely used compressed tablet if given on an empty stomach may act as an irritant, producing nausea and occasionally vomiting. A mixture of sodium salicylate with sodium bicarbonate in the form of an effervescent draught is an acceptable method of administering the salt. The following prescription may be used for a mixture of this kind:

		gm.	
℞	Acidi salicylici.....	10	ʒiiss
	Sodii bicarbonatis.....	20	ʒv
	Misce et fac chartulas xx.		

Sig.: Dissolve the contents of one paper in a glass of water and drink as effervescence is about completed.

If an effervescent mixture is not desired it may be directed to be dispensed in the form of a "shake" mixture with water; care should be taken to have it recently prepared, as the alkali tends to decompose the sodium salicylate on standing.

Methylis Salicylas.—Methyl Salicylate, U. S. P.

An ester of salicylic acid ($CH_3C_7H_5O_3$) which occurs in oil of sweet birch and oil of wintergreen, or which may be produced synthetically, the products from the three sources being identical. Up to the present time there is no reliable method of differentiating between them.

Pure methyl salicylate is a colorless liquid having a characteristic strongly aromatic wintergreen odor and a sweetish, warm, aromatic taste. It is nearly insoluble in water but is miscible in all proportions with alcohol and the fatty oils.

For internal use methyl salicylate or either of the natural oils is best directed to be dispensed in capsules. It is also readily absorbed from the skin and

* Owing to lack of space, a part of the materia medica of this group has been omitted from THE JOURNAL. It will be included when the series is published in book form.

is frequently applied in the form of a liniment. A type prescription for this kind of application is the following:

		c.c.	fl℥ xii
℞	Methylis salicylatis		
	Linimenti saponis.....āā	50	

M. Sig.: Use as a liniment.

The soap liniment in the foregoing formula may be replaced by one of the fatty oils like olive oil, or, if an additional counter-irritant is desired, by chloroform liniment.

Betanaphthol.—Betanaphthol, U. S. P.—Naphthol. Beta-hydroxy-naphthalene ($C_{10}H_7OH$) is a monatomic phenol occurring in coal-tar, but usually prepared by treating naphthalene with sulphuric acid and subsequently decomposing the naphthalene sulphonic acid thus formed.

Betanaphthol occurs as colorless or pale buff-colored crystalline scales or a crystalline powder having a faint phenol-like odor and a sharp pungent but not persistent taste. It is only slightly soluble (1:950) in water but very soluble (1:06) in alcohol. For internal administration it is usually directed to be dispensed in the form of powder or capsules, preferably in combination with bismuth subnitrate or bismuth subcarbonate.

		gm.	gr. xv
℞	Betanaphtholis	1	
	Bismuth subnitratis.....	10	℥ iiss
	Misce et fac chartulas xx		

Sig.: One powder before meals.

For use as an antiseptic, protective ointment it may be prescribed as follows:

		gm.	gr. xxx
℞	Betanaphtholis	2	
	Petrolati	30	℥ i

M. Sig.: Use externally.

URINARY ANTISEPTICS AND DISINFECTANTS

HEXAMETHYLENAMIN

Numerous balsams, oleoresins and volatile oils were used formerly as antiseptics for the urinary tract, but these have been almost entirely superseded of late by hexamethylene-tetramin, or, as it is officially known, hexamethylenamin, which is sold under a great many different trade names, including urotropin, formin, aminoform, formamin and many others.

Hexamethylenamin is not actively antiseptic, but it is decomposed in acid urine with the liberation of formaldehyd, which is the active agent. Hexamethylenamin has no antiseptic action in the tissue fluids or in neutral or alkaline urine. Strongly acid urine liberates the formaldehyd much more effectively than does feebly acid urine; hence it is better to use even small doses of hexamethylenamin while adopting measures to insure marked acidity of the urine than to use large doses of the drug while the urine is alkaline or only feebly acid. The acidity of the urine can be increased by the use of acid sodium phosphate (NaH_2PO_4). Note that this is not the official sodium phosphate[5] U. S. P. VIII, which is disodium phosphate (Na_2HPO_4).

Since the disinfectant and antiseptic activity of hexamethylenamin depend on the liberation of formaldehyd by acid mediums, it is obvious that it can have no material antiseptic value in the spinal fluid during spinal meningitis. Large doses were used for this purpose after it had been observed that hexamethylenamin is secreted into the spinal fluid.

It is obvious that the hexamethylenamin should not be decomposed before it reaches the urine; hence acids and acid salts, including monosodium phosphate, and acetylsalicylic acid, should not be mixed with it, even though they are used simultaneously.

Hexamethylenamin is used to prevent the growth of micro-organisms in the urinary tract, and to destroy them when they are present in the urine during infectious diseases such as typhoid fever.

It is used as an antiseptic in cystitis and as a prophylactic in operations on the urinary tract. It is sometimes used to prevent nephritis in scarlet fever, but very large doses cause albuminuria.

A solution of formaldehyd is a solvent for uric acid, and on this basis hexamethylenamin has been used to dissolve calculi; but it is practically useless for that purpose.

It is one thing to hold a substance in solution or prevent its precipitation when one uses a concentrated solution of formaldehyd, and quite another matter to dissolve calculi in weak solutions such as one may secure in the urine.

Hexamethylenamin is sometimes used in infections of the respiratory tract, but formaldehyd can be applied directly in such cases and there is no evidence that hexamethylenamin has any value in such conditions.

DOSAGE

Hexamethylenamin is frequently administered in doses of 0.3 gm. (5 grains), though many practitioners prefer much larger doses, from 1 to 2 gm. (15 to 30 grains) being administered three or four times a day to patients who do not manifest the unpleasant secondary symptoms that are sometimes caused by it.

MATERIA MEDICA *

Hexamethylenamina.—Hexamethylenamin, U. S. P. This preparation is known and used under a variety of trade names, and in foreign pharmacopeias is generally recognized by its chemical title, hexamethylenetetramin ($(CH_2)_6N_4$), a product formed by the condensation of ammonia and formaldehyd with the elimination of water.

Hexamethylenamin occurs as colorless, lustrous, odorless crystals having, when in aqueous solution, an alkaline reaction on red litmus paper. It is freely soluble (1:1.5) in water, and soluble (1:10) in alcohol. Hexamethylenamin is incompatible with acids, acid salts and combination acids like aspirin, which react with it and liberate formaldehyd. It is also incompatible with salts of ammonia, from which it separates ammonia. To avoid possible decomposition it is best administered by itself either in simple solution or in the form of powder, capsules or cachets.

Argenti Nitras.—Silver Nitrate, U. S. P.

Silver nitrate is a germicide of extraordinary activity against the gonococcus. Solutions of from 1:10,000 to 1:2,000 have been used for injection into the urethra and solutions of 1:5,000 into the bladder, but even dilute solutions are irritant to the urethra, and silver nitrate has been largely replaced in recent years by the less irritant organic silver compounds.

5. Jordan, Anson: Urinary Antiseptics, Brit. Med. Jour., Sept. 13, 1913, p. 648.

* Owing to lack of space the materia medica of copaiba and oleum santali has been omitted from THE JOURNAL. It will be included when this series is published in book form.

Surfaces should be cleansed before applying the solution, the action of which may be stopped at once by applying a solution of sodium chlorid which precipitates the insoluble silver chlorid. This should be borne in mind when solutions are prepared, and only distilled water should be used for the purpose.

Silver nitrate has come into wide-spread use for treating the eyes of the new-born to prevent infection, especially where there is reason to fear gonorrheal conjunctivitis. Immediately after the head appears on the perineum the face is wiped clean and a drop of 2 per cent. solution of silver nitrate is dropped into each eye.

It is used in various forms of conjunctivitis but it should not be used indiscriminately, as it is capable of doing much harm when used in unsuitable conditions.

Some other uses of silver nitrate will be discussed when the astringents are considered.

Protargol, or silver proteinate, contains 8.3 per cent. of silver combined with albumin. It is used as a non-irritant substitute for silver nitrate in gonorrhea and in diseases of the eye, nose and throat.

Dosage.—Silver nitrate is used in solutions varying from 1 : 50 to 1 : 10,000. Protargol is used in solutions up to 20 per cent. The solutions of the latter are best prepared by sprinkling the protargol on the surface of the required amount of water and allowing it to dissolve spontaneously.

(To be continued)

Therapeutics

PREVENTION IS GREATER THAN CURE

(Continued from page 1075)

XXV

CEREBROSPINAL FEVER

EPIDEMIC CEREBROSPINAL MENINGITIS; SPOTTED FEVER

This disease occurs in epidemic and sporadic forms, the latter form being often difficult to diagnose. The epidemics are generally small in number of affected persons and more or less localized. While young children and young adults are most often attacked, it occurs not infrequently in camps, or in other groups of closely associated individuals. Hardship, privation, exhaustion and poor sanitation seem to allow it to occur. The sporadic form is always more or less present in most cities, and so-called "basillar meningitis" is doubtless generally this disease. Some epidemics in cities show a large number of very young children affected by it. Epidemics appear, both in this country and in Europe, most frequently in the winter and spring months, and the greatest number of sporadic as well as epidemic cases occur during March, April and May.

ETIOLOGY

The cause of epidemic cerebrospinal meningitis is the *Diplococcus intracellularis meningitidis,* also called meningococcus, which was first described by Weichselbaum, in 1887. These cocci are found in the spinal fluid. In appearance they are very much like gonococci, and lie in pairs either in or near the leukocytes. These germs are also found in the secretions of the nose and nasopharynx. They have been found in the blood stream, in the lungs, in the joints, and in other parts of the body. The meningococcus is of low vitality and is readily killed by sunshine, drying and by freezing; therefore, with ordinary precautions the danger of contagion is slight. As in so many other diseases, carriers of this germ have been found, and they probably play a considerable part in the spread of epidemics and in the occurrence of sporadic cases. In those suffering from this disease the germ has also been found in the conjunctiva, and even in the pleura, and the meningococcus has been found in some instances[1] in the lungs of those who have had pulmonary inflammations without meningitis. The frequency with which this germ has been found in contacts has greatly varied, Goodwin and von Schelly[2] having found it in the nasal secretions in as many as 10 per cent. of contacts.

The way in which these germs in the nasopharynx reach the meninges and cause cerebrospinal fever has long been discussed. It seems probable, as they are early found in the blood, that the blood stream is the method of conveyance, although the possibility, especially in young children, of their reaching the meninges through the sphenoidal sinuses and first causing perihypophysial inflammation has been long considered and discussed. It is also possible that the blood may spread the infection from the bronchial mucous membrane.

Flexner[3] produced meningitis in monkeys by injecting the infection intraspinally, though injections into the blood by other investigators had not caused the disease.

From these facts meningococcus cerebrospinal meningitis should be made a reportable disease, whether occurring in sporadic or epidemic form, and carriers should be sought, and when discovered, isolated and treated.

SYMPTOMATOLOGY

The disease generally begins suddenly, although there may be such prodromes as aches and pains, especially in the head, with a general feeling of weariness. Soon the headache becomes intense, and most severe in the back of the head. This headache is accompanied by fever, generally there is vomiting, and there may be early, in fulminating cases, delirium and stupor. Soon there is pain in the back of the neck, with more or less stiffening of the muscles, and tenderness and pain along the spine. Pain in the extremities and body occurs, stiffening of muscles or groups of muscles, and convulsive movements may be present. Deafness is a frequent symptom. Ringing in the ears may be present. The vision may be disturbed. The disease may be so rapid as to cause death within twenty-four hours or even less, but the usual duration is from two to four weeks. Even when the disease is protracted six weeks or more, death may still occur. In prolonged cases a peculiar intermittency or remission of symptoms often occurs.

Herpes frequently occurs on the mouth or face. The frequent occurrence of petechiae has given this disease the name of "spotted fever." Other eruptions, of urticarial type principally, often occur. The spleen is generally enlarged; the appetite is almost absolutely lost; there may be very obstinate constipation, rarely diarrhea. Albuminuria may occur; there may be polyuria or sugar may be found in the urine from irri-

1. Jakobitz: Ztschr. f. Hyg. u. Infections krankh., 1907, lvi, 175.
2. Goodwin and von Schelly: Jour. Infect. Dis., 1906, p. 21.
3. Flexner: Jour. Exper. Med., 1907, ix, 142.

tation of the central nervous system. In some instances there is inability to void the urine, not infrequently due to the administration of opiates for the severe pain.

The height of the fever, while generally indicating the intensity of the disease, does not always do so, as a serious and dangerous attack may be accompanied by but little fever.

There is hardly any part of the body that may not show a complication from this disease. The most frequent complications are, perhaps, pleuritis, pericarditis, pneumonia and arthritis. Inflammations of the parotid glands and of the kidneys are not infrequent. Acute and permanent disturbances of the special senses, due to localized inflammations in different parts of the cerebrum, are not infrequent.

The prognosis has varied enormously in different epidemics, said to be from 20 to 75 per cent. With the serum therapy offered by Flexner and his co-workers this mortality has been very greatly reduced. In young children the mortality is greater than in adults. Even when the symptoms apparently ameliorate, the prognosis should be guarded, as many times a dangerous exacerbation occurs.

DIAGNOSIS

As the success of treatment in this disease depends so much on an early and immediate diagnosis, and the diagnosis is many times so difficult except by expert methods, it is essential, in discussing the therapy of this disease, to insure that the diagnosis is correct. This whole subject has recently been very ably discussed by Du Bois and Neal[4] of New York. These physicians, specializing in the clinical and laboratorial findings in this disease, are able to present valuable statistics. They have examined 992 cerebrospinal fluids, and state that the conditions to be differentiated from meningococcic meningitis are streptococcic and pneumococcic meningitis, that due to the *Streptococcus mucosus capsulatus,* influenza, tuberculous meningitis, poliomyelitis and meningismus, particularly when it occurs in pneumonia.

There is always a leukocytosis in this disease, ranging from 25,000 to 40,000 per cubic millimeter. This leukocytosis is found early, and persists during the activity of the disease. Hess[5] of Chicago found that the relative numbers of neutrophils and lymphocytes varied from time to time in this disease. He found that the eosinophils disappeared early in the infection and did not recur until convalescence was established. As sporadic cerebrospinal meningitis cases are often difficult to diagnose, and they many times simulate typhoid fever, besides the absence of a Widal reaction, a leukocytosis would preclude typhoid fever. Also, leukocytosis is not present in intermittent fever, and quinin should not be administered in meningitis; hence, an examination of the blood, by showing absence of malarial plasmodia and the presence of a leukocytosis would show the disease not to be malarial fever.

Meningismus is a condition now recognized as occurring not infrequently in serious illnesses, especially in children. It is most frequently seen in pneumonia, gastro-enteritis, and typhoid fever. While the cerebrospinal pressure may be increased in this condition, there may be no germ invasion, and no real inflammation, and though many meningeal symptoms may be present, they may all rapidly improve. The subject of meningismus is also discussed by Du Bois and Neal.[4]

Du Bois[6] states that the rigidity of the neck of infants in epidemic cerebrospinal meningitis is many times so easily overcome as to make one doubt its existence, but when the infant is turned on its side, the head is seen to be markedly retracted. Du Bois and Neal consider that the most important signs of meningitis are stiffness of the neck, variations of regularity in the rate and depth of respiration and MacEwen's and Brudzinski's signs. "MacEwen's sign is that which shows a change in the percussion note over the lateral ventricles due to increased intraventricular pressure;" while "Brudzinski's sign consists in the flexion and eversion of the legs and arms when an attempt is made to flex the head on the chest." Irregularities of the pupils, conjunctivitis, strabismus and nystagmus are all important signs of meningitis. Very young infants may show a bulging fontanel. Conjunctivitis is common in epidemic cerebrospinal meningitis, but these investigators find that it is rare in other meningeal conditions. Ptosis of the eyelids and strabismus they find more common in tuberculous meningitis. The so-called Biot's breathing, that is, markedly irregular respirations, both in depth and time, they find present in true meningitis. Cheyne-Stokes respiration is more frequent in tuberculous meningitis, and the pulse is more likely to be irregular in rate and volume in this than in other meningeal conditions. Paralysis they find infrequent in epidemic cerebrospinal meningitis, frequent but transitory in tuberculous meningitis, and always present in real poliomyelitis. The temperature is irregular in cerebrospinal meningitis; generally low in tuberculous meningitis; has a high rise and drops quickly in poliomyelitis.

The petechial eruption of so-called spotted fever they found to occur but infrequently, they having found it only sixteen times in 112 cases. On the other hand, herpes is frequent.

N. P. Barnes[7] of Washington states that he has frequently found, in true cerebrospinal meningitis, that a rash could be caused by directing an electric light and reflector on any portion of the body. He has found this sign absent in other forms of meningitis. He also calls attention to the fact that he has noted dilatation of the pupils produced in all his cases when Kernig's sign was being elicited. Kernig's sign alone was found by Du Bois and Neal not to be important in young children.

Conner and Stillman[8] of New York made a study of the respiratory irregularities of meningitis, and especially of Biot's "meningitic rhythm," which rhythm lacks the regular alternation periods seen in the Cheyne-Stokes type of respiration. These investigators found that Cheyne-Stokes breathing occurred in 53 per cent. of all cases of meningitis, and in 63 per cent. of all cases in children, and it was much more frequent in tuberculous meningitis. They found that "Biot's breathing, when it occurs, may be regarded as almost pathognomonic of meningitis,"

4. Du Bois, Phebe L., and Neal, Josephine B.: Summary of Four Years of Clinical and Bacteriologic Experience with Meningitis in New York City, Am. Jour. Dis. Child., January, 1913, p. 1.

5. Hess, Julius H.: Leukocyte Counts in Pneumonia and Cerebrospinal Meningitis, Am. Jour. Dis. Child., January, 1914, p. 1.

6. Du Bois, Phebe L.: Differential Diagnosis and Treatment of Epidemic Cerebrospinal Meningitis, THE JOURNAL A. M. A., March 15, 1913, p. 820.

7. Barnes, N. P.: Interstate Med. Jour., 1913, xx, 9.

8. Conner, Lewis A., and Stillman, Ralph G.: A Pneumographic Study of Respiratory Irregularities in Meningitis, Arch. Int. Med., February, 1912, p. 203.

while the Cheyne-Stokes type they found to be of no special diagnostic value in adults, but in children, if associated with other suggestive symptoms, it points decidedly toward meningitis.

Of course the most important diagnostic determination is made by spinal puncture. It may be well first to note that Dixon and Halliburton[9] have recently investigated cerebrospinal pressure. After hemorrhage they find a fall in this pressure. They found that variations in cerebrospinal pressure alter the cerebrovenous pressure. They experimented also with various drugs, and found that suprarenal pressor substance affected the cerebrospinal fluid only indirectly, and that the cerebrospinal pressure falls more rapidly than the blood pressure. There is a rise in spinal pressure after the administration of amyl nitrite. They found that deficiency in oxygen or an increase in carbon dioxid in the blood raised the cerebrospinal pressure. In other words, they concluded that there may be constant variations in the amount of the cerebrospinal fluid and consequently the cerebrospinal pressure, due to different conditions of the circulation, but that the amount of change was insignificant compared with that caused by secretory activity of the walls of the cerebrospinal canal.

The Lange gold chlorid reaction of the cerebrospinal fluid of infants and young children as giving evidence of cerebrospinal disease, and especially of syphilis, has been recently tried in over sixty children, by Grulee and Moody[10] of Chicago, who give their technic, but from their findings come to the conclusion that the test is only an aid in diagnosis.

In spinal puncture Du Bois and Neal find that "a clear fluid increased in amount indicates usually one of the following conditions: tuberculous meningitis, poliomyelitis, syphilitic involvement of the central nervous system, brain tumor, or meningismus. A cloudy fluid is the result of a meningitis due to the meningococcus or some of the other pyogenic organisms." As above suggested, in meningismus there is increased cerebrospinal fluid, but it is normal in character. The amount of fluid withdrawn by Du Bois and Neal has varied greatly; they have withdrawn as much as 100 c.c. "In a true meningitis the fluid is inflammatory in character—of the nature of an exudate, and shows an increase in albumin and globulin, and in the number of cells." In meningismus they consider the increased fluid as a transudate. With a cloudy fluid and the finding of the meningococcus, the diagnosis of so-called cerebrospinal fever is positive.

PREVENTION

In the first place, it may be mentioned that rarely it has been noted that the disease has attacked an individual more than once. In the second place, carriers have become more or less immune, but it is self-evident that, having been discovered, although close contact is needed, and though the germ is not sturdy and is readily killed after leaving the body, they must be isolated and treated. Therefore, the persons immediately surrounding a case of meningococcic meningitis should have the secretions of the nose and nasopharynx examined for this germ. It has not been shown just what local treatment of the nose and throat of these individuals is advisable, but antiseptic sprays, swabbings and gargles are certainly indicated.

Vaccinations, with dead meningococci, of children who have been directly exposed to the disease, and of the nurse or other persons, who must care for cerebrospinal fever patients would seem to be advisable in preventing the spread of the disease. It has been suggested that a moderate amount of immunity would be sufficient to prevent this particular infection. How long immunity would last is not known. Vaccination with this germ causes a febrile reaction, with leukocytosis. Meningococcus vaccines are now prepared, and can be readily obtained. Sophian and Black[11] have discussed this subject. Meningococcic vaccine has been injected, and antimeningococcic serum has been sprayed into the noses and throats of carriers, with some success. It has not been shown how constantly this treatment is successful.

TREATMENT

It is hardly necessary to urge that the disease should be made reportable, and be reported as soon as the diagnosis is positive. A patient with any primary meningitis should be more or less isolated until the germ of infection has been determined.

Flexner has given us a specific treatment, and the method to be followed in its administration cannot be better described than by once more referring to Du Bois and Neal.

If the fluid taken from the spinal canal is cloudy, they immediately inject antimeningitis serum, warmed to the body temperature, and injected slowly. They consider a syringe as dangerous, and adopt Koplik's gravity method. They state, in general, that the dose for an adult is from 20 to 40 c.c., and for infants and children from 3 to 20 c.c., the amount largely depending on the quantity of fluid withdrawn, and the dose should usually be from 5 to 10 c.c. less than the amount of fluid withdrawn. They state that occasionally in true meningococcic meningitis they have obtained no fluid from the canal in spinal puncture, so-called dry tap. In such cases they have injected a small amount of the antiserum, with careful watching of the patient to note changes in pressure as determined by the character of the pulse and respiration. In severe cases they inject the antiserum every twelve hours until there is improvement. In moderate and mild cases they usually repeat the injection once a day for four days. The bacteriologic findings of the fluid withdrawn at the last injection, and the condition of the patient, determines whether the antiserum should be given longer. They state that usually from four to six injections are necessary, but they have given sixteen or more. On successive punctures and injections the patient is turned first on one side and then on the other, which they think insures the emptying of the lateral ventricles in rotation. In other words, a patient who lies on his right side for one puncture will be placed on his left for the next.

A number of times they have seen the patient go immediately into a condition of shock after the injection of the serum, with the respiration shallow, the face pale, and the pulse rapid and thready. They have never, however, seen a patient die in this condition, and if the needle is still in place they withdraw some of the serum. Artificial respiration is resorted

9. Dixon and Halliburton: Jour. Physiol., 1914, xlviii, 128.

10. Grulee, C. G., and Moody, A. M.: The Lange Gold Chlorid Reaction on the Cerebrospinal Fluid of Infants and Young Children, Am. Jour. Dis. Child., January, 1915, p. 17.

11. Sophian, Abraham, and Black, J.: Prophylactic Vaccination Against Epidemic Meningitis, The Journal A. M. A., Aug. 17, 1912, p. 527.

to if the breathing has ceased, and hypodermic stimulation of the heart is given. This condition of shock does not occur frequently with the smaller doses that are now administered. The serum they have lately used contains 0.2 per cent. of trikresol, and as they have used trikresol serum over five hundred times in patients of all ages, they do not believe that fatalities are due to the phenol contained. However, on account of objection having been made to trikresol, they are ready to try chloroform as a preservative.

Barnes[12] states that antimeningococcus serum differs from ordinary antiserums in that it is destructive to the meningococci, and at the same time neutralizes the endotoxins set free during the destruction of the germs.

If a case of cerebrospinal fever shows a tendency to become chronic, Du Bois and Neal make an autogenous vaccine and give it every four or five days, "in doses of from 250 to 1,000 million" bacteria. They are not convinced of the value of this treatment, but they have not seen it do any harm.

The general treatment of cerebrospinal fever demands the best hygienic surroundings obtainable, and a quiet, cool, darkened room, as in any meningitis. The bowels should be thoroughly moved in the beginning, and then, daily, or every other day, the patient should receive a laxative, if needed.

As the vomiting is reflex, stomach sedatives are of no avail. As the central condition is improved or the patient becomes more stupid, the vomiting will cease. Food in the early stages should not be pushed, as there is great repugnance to it. Plenty of water, and later simple cereal gruels and milk should be the early diet. The subsequent diet should depend on the height of the fever and the ability of the patient to digest. In the stage of convalescence food should be pushed, if it is well digested. Through the acute illness, starches should be given to prevent acidemia. If the pain is sufficient to require sedatives, much food should not be given, as it will not well digest.

A most important symptom of this disease is likely to be pain, and there is no excuse for allowing a patient, because it is a young child, to suffer pain. Morphin or codein represent the most efficient and the safest drugs, the dose, of course, being regulated according to the age of the patient and the effect. Generally it is better to administer a very small dose hypodermically than a large dose by the mouth; the action of the whole dose is obtained, and there is no doubt as to whether or not it is absorbed. Ergot given in aseptic form, intramuscularly, not only seems to act as a sedative to the nervous system and possibly diminishes congestion, but it certainly prolongs the action of any dose of a narcotic. Less morphin, codein or other narcotic will be required to stop pain and cause rest if ergot is coincidently given. If the blood pressure is low, this is another indication for the administration of ergot. Generally, if the blood pressure is high, ergot should not be given.

Local applications of cold and ice to the head (the hair being cut short) and to the spine, may inhibit the inflammation, and sometimes seem to be of great value. At other times these cold applications seem to increase the pain. This seems to be especially true if the temperature is low. Exactly what these cold applications do to the blood vessels of the parts inflamed is a question that has not been determined. Cold sponging of the body is hardly advisable, as it tends to increase the internal congestion. Theoretically, it would seem more sensible, and practically it is often better to use hot applications, as hot sponging, and even hot baths have been advised, for very young children, to relieve the congestion of the central nervous system.

Painful joints may be wrapped in cotton and kept warm, much as is done in rheumatism. Conjunctivitis should be treated with a simple boric acid wash. The throat and nose should be cleansed with simple saline sprays or mild antiseptic gargles.

There would seem to be no excuse for the administration of quinin, strychnin, caffein, or any other cerebral stimulant. It would also seem inadvisable to administer alcohol in any form. If the blood pressure is high, hot sponging, small doses of nitroglycerin and more brisk catharsis are indicated.

The patient should remain in bed for at least a week after the cessation of the fever, and convalescence should be slow, and the return to activity should be delayed. During convalescence it is well to administer small doses of sodium iodid, as iodid seems to be efficient in aiding the absorption of exudates. Iron and other tonics may be indicated.

Stiffening of the muscles and joints may require massage, and, if there are any adhesions in the joints, the orthopedist should be consulted as to whether passive movements or forcible breaking up of these adhesions under an anesthetic is advisable.

The frequency with which mental deterioration occurs can only be determined by a long careful study of many cases. Cerebral degenerations and disturbances may develop after many years and yet apparently have been caused by this disease.

The various complications that may occur have already been mentioned, and their treatment would be that usual for the localized inflammation modified by the general condition of the patient from the cerebrospinal fever.

INFLUENZAL MENINGITIS

That the *Bacillus influenzae* can cause meningitis has long been known. It has been well described by Rhea[13] of Montreal. The serum treatment of influenzal meningitis was presented by Wollstein.[14] Dr. Flexner has produced an anti-influenzal serum which may now be used in this disease. The success of such treatment has not yet been determined.

A brief but careful review of recent literature up to about a year ago, on meningitis other than that of cerebrospinal fever, has been presented by Heiman and Feldstein.[15]

(To be continued)

12. Barnes: Interstate Med. Jour., 1913, xx, No. 9.

13. Rhea, Lawrence J.: Cerebrospinal Meningitis Due to Bacillus Influenzae, Arch. Int. Med., August, 1911, p. 133.
14. Wollstein: Jour. Exper. Med., 1911, xiv, 73.
15. Heiman, Henry, and Feldstein, Samuel: Résumé of the Recent Literature on Meningitis (not Including Meningococcus Meningitis), Am. Jour. Dis. Child., September, 1913, p. 199.

Distinctive Poison-Containing Bottle.—R. J. Lackner has invented a bottle to contain poisons which will give warning of its dangerous contents every time the bottle is opened. The device consists in a specially constructed cork containing a highly odoriferous substance the odor of which escapes immediately the cork is removed from the bottle and warns not only the person opening the bottle, but those in the immediate vicinity. By this means Lackner believes many lives would be saved that are now sacrificed by the mistake of getting hold of the poison-containing bottle.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET . . . CHICAGO, ILL.

Cable Address . . . . "Medic, Chicago"

Subscription price . . . . . Five dollars per annum in advance

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SATURDAY, APRIL 3, 1915

CLIMATE AND THE DISTRIBUTION OF PLAGUE

Epidemiology often affords unique instances of immunity to disease that call for careful inquiry to explain them. The freedom of certain areas from invasion by infections which have devastated neighboring regions is frequently a phenomenon that, when understood, will reveal secrets of importance in respect to the implantation of disease. An instance of what is here referred to is found in certain parts of India. Although much of that country has suffered severely from the plague, the Madras Presidency has been affected to a relatively slight degree. To account for this immunity has been one of the many problems confronting the British commission appointed to deal with the plague in India. The ninth report,[1] just issued by the advisory committee appointed by the secretary of state for India, the Royal Society of London and the Lister Institute, deals with this subject.

As a starting point it must be emphasized that the evidence that in India bubonic plague is determined by the simultaneous occurrence of the disease among rats, and that the rat flea is the agent whereby the virus is transported from rat to man, is overwhelming. It became important, therefore, to determine whether the conditions in Madras as regards rats, fleas and allied factors were such as to be unfavorable to the spread of the plague; or whether certain districts had escaped because the infection could not easily reach them. A comparative examination of rats and fleas found in severely or moderately infected areas and in the plague-free districts of the Madras Presidency has shown that in none of them, in the light of the commission's experience elsewhere, was the number of the rodents and their parasites too small to permit the development of an epidemic among them.

From the fact that severe epidemics have occurred in localities in which the rats and fleas are far less numerous than in the places which have escaped infection, it must be assumed that other factors account for the comparative deficiency in rats and fleas. The immunity can scarcely be due to a lack of susceptibility to plague in the case of rats caught in the places that have been free from plague epidemics; for, as a matter of fact, actual investigation has shown that the rats caught in the plague-free districts are extremely susceptible. It is not unlikely that during the course of a succession of severe plague epidemics in a place, a race of rats is ultimately established, the individuals of which are comparatively immune to the disease. This is probably brought about by the destruction of susceptible rats in the recurring epidemics and the survival of the more immune which are capable of transmitting their immunity to their offspring. The existence of highly susceptible rats in the Madras district may be interpreted to mean that the areas in which they are found have long escaped the plague.

The India Plague Commission is inclined to the belief that the physical features and climate of the Madras Presidency are the important influences in limiting the distribution of the plague in it. When rat fleas are separated from their host, they speedily succumb to the combined effects of a high temperature and drying. The seasonal variations in the number of fleas caught on rats is in accord with the effect of climatic factors on the insects. Unfavorable conditions are found in the hot and dry plains, in contrast with the cooler and moister sea-coast districts. As plague is carried from place to place in the bodies of infected fleas, any local conditions affecting the survival of these insects apart from a host are of importance in determining the liability of the neighborhood to plague. Even when infected rats are transported from place to place, there is nevertheless an interval when infected fleas are separated from their host before they may find access to man, during which they are subject to prevailing climatic conditions. Plague-free Madras may thus owe its comparative immunity in part to the warm climate obtaining over the greater part of the presidency. Invasion is further restricted by the fact that a low-lying comparatively hot and dry plain separates the areas at present infected from the more humid and cooler coastal regions, especially in the north of the presidency. In certain years, especially when the temperature has been lower and the humidity higher than normal, plague has extended to the places immediately adjacent to more commonly infected areas. There is, however, little tendency for the plague to flourish in places beyond its usual limits.

The districts which have suffered most resemble each other in being the most elevated and coolest regions of the presidency; but they also have the characteristic in common that they are in closest proximity to infected areas outside the Madras Presidency. It is not intended to overlook the fact that a number of circumstances, some more, others less favorable to the development of the disease, are usually at work

1. Ninth Report Issued by the Advisory Committee Appointed by the Secretary of State for India, the Royal Society of London and the Lister Institute, Jour. Hyg., Plague Supplement IV, 1915. The results of a preliminary inquiry were published as the seventh report, supplement to the Journal of Hygiene, 1912.

together. Meteorologic conditions which are believed to have such a large influence on the duration of life of the rat flea when separated from its host, so that a cool, moist atmosphere often allows it to survive ten times as long as in hot dry air, can no longer be overlooked. Evidently fleas would have some difficulty in arriving alive at any place which was surrounded by a zone of country in which a high temperature, especially in conjunction with a low humidity, continuously prevailed. On the other hand, traffic conditions are certainly not without some bearing in the distribution of the plague.

It is difficult to estimate the relative importance of the facilities afforded for the transport of insects from infected to uninfected localities and the climatic agencies. Probably they have unlike significance in different places. According to the latest India plague report, the extraordinary susceptibility of Madras rats to plague, in conjunction with the absence of any historical record of the disease in this part of India, suggests that the present immunity of the province is not exceptional and that the Madras Presidency has escaped plague not altogether because of the measures which have been adopted to prevent its spread during the present pandemic, but largely owing to climatic or other peculiarities.

IMPROVEMENT OF MEDICAL CONDITIONS IN CHINA

THE JOURNAL last year announced the appointment of a commission by the Rockefeller Foundation to study medical and health conditions in China. The report of this commission has just been received. A casual review of it reveals vividly the tremendous need for better medical, hospital and nursing service in that country. The commission believes that better medical teaching is the first step, and with that idea it studied carefully existing medical schools. Seventeen schools were visited, together with various universities and secondary schools, both missionary and governmental, and a large number of hospitals. Everywhere the lack of funds, personnel and equipment for effective work was apparent. In only one or two medical schools was there anything that resembled adequate teaching facilities. The central government maintains schools at Peking and Tientsin, and there are government-supported schools in some of the provinces. Missionary medical schools are found in almost every province. These were started as dispensaries and hospitals, and the necessity for native assistants, as the work grew, led to the training of young men for such purposes, and finally some of them were educated in medical science by the hospital physicians. In only a few places, likewise, were adequate hospitals found, but many, mostly under missionary management, were doing good work under great difficulties. The report emphasizes that the need for medical work in China is great, and the opportunities for progress in all lines are equally great.

Though there is opposition in some quarters to western medical methods, this is rapidly breaking down, and the objects of the commission were approved by officials and prominent citizens in all the places visited. The commission recommends that the foundation undertake medical work in China in cooperation with missionary and other existing institutions; that a high standard be maintained for medical instruction, which should be in the English language; that the time is not ripe for large public health work on account of lack of suitably trained men, though existing hospitals should be assisted and two model tuberculosis hospitals established; that the first educational work organized should be at Peking, if possible in connection with the existing Union Medical College; that the Christian College for medical education at Canton and the Yale Mission at Changsha should be assisted, and that the two competing medical schools at Shanghai, both under American auspices, should be made over into a single institution. Other recommendations refer to fellowships, scholarships, the development of hospitals, the training of nurses in the hospitals aided by the foundation, and the training of a few selected women in the United States. The requirements of the situation are so great that the development of effective service will be the work of years.

The report is a record of a splendid piece of work, accomplished in a comparatively short time, by a body of experts happily selected for the task. It is a document of great human as well as medical interest in the picture which it reveals of conditions in an awakening country.

TYPHOID FEVER IN THE PHILIPPINES

There are statistics available to indicate that typhoid fever is somewhat more prevalent in certain parts of our insular possessions in the Far East than it was in former years. It would probably be overhasty to say that the disease is on the increase. At the Philippine General Hospital in Manila there was a fairly uniform relationship of the number of typhoid patients admitted to the total admissions, during 1911 and 1912. During the first half of the year 1913 there was a marked increase. The factors concerned are not easy to detect; for it is doubtless true that the people concerned are becoming more accustomed to hospitalization, and the incidence of a severer type of malady like typhoid may thus indirectly come more prominently to our attention. We are reminded in any event that the importance of recognizing the incidence index of typhoid fever in the Philippines cannot be overemphasized, because once this infection gains a foothold, it will be difficult to eradicate owing to the peculiar environment and poor hygienic conditions under which most of the people live.

It is desirable to learn more about the clinical characteristics and mortality of the disease among the native inhabitants of the tropical countries than is known at present. Interest attaches, therefore, to a summary by Dr. Gutierrez[1] of the conditions observed in the large government hospital at Manila, where most of the cases of typhoid fever treated occur among native Filipinos. It is based on a study of 125 Filipinos out of a total of 137 cases admitted to the Philippine General Hospital during a period of a little less than two years.

In the Philippines there is noted the same seasonal incidence which is characteristic of typhoid in Europe and the United States, where the greatest prevalence is seen during the autumn months, continuing into the winter, and declining in the spring. The variation in seasonal distribution is perhaps not so marked; and in view of the limited series of cases, conclusions must be expressed with reserve. The sex incidence offers no features of novelty. The age incidence likewise corresponds in a general way with that observed in other countries.

With respect to the clinical features, Dr. Gutierrez points out that although the fever course of the typhoid seen in the Philippine General Hospital is essentially the same as in the United States and in Germany, the temperature is much lower and the fastigium is not so typical. This may account for the fact that delirium and the typhoid state are not so common as in other countries. Relapses occur about as frequently; abortive types appear to be rather common, and are often difficult to diagnose. For this reason, in the Philippines every continued fever with slow pulse and enlarged spleen should have a serum reaction and other confirmatory tests, along with blood culture in all cases of doubt.

Intestinal hemorrhages have occurred in nearly one-seventh of all cases. The only explanation suggested for this large number is the neglect of the gastro-intestinal canal consequent to delay among the Filipinos in receiving medical attention. Perforation is likewise common. Although the mortality seems high when the records are superficially examined, the peculiar conditions encountered must be borne in mind before evaluating the statistics. The Filipinos undoubtedly have a lowered resistance consequent on their modes of life and limited diet. Many patients come to the hospital in a hopeless condition and thus help to swell the death rate. We are assured, however, that as the diet of the natives is being improved and the cases are admitted to the hospital earlier in the course of the disease, a more normal death rate is being approached.

This is what may be expected in an institution which, during the few years of its existence, has worked so effectively for the relief of the sick in Manila and in the provinces, has contributed much to scientific medicine, has helped to raise the standard of hygiene and of medical practice in the Far East, and has abundantly justified the expectations of those who have confidence in the efficiency of American institutions.

1 Gutierrez, P.: Typhoid Fever in the Philippines, Philippine Jour. Sc., (B), 1914, ix, 367.

THE RIPENING AND STORAGE OF CERTAIN FOODS

The fruits of plants and storage organs, such as roots and tubers, have always furnished a considerable component of the diet of mankind, and are therefore entitled to serious consideration in respect to their chemical composition and nutrient virtues, as well as from the point of view of their economic availability. Every one makes the distinction between ripe and unripe products of this sort in every day life; yet there is a surprising dearth of information in many directions as to precisely what the basis for such differentiation is. Why one variety of apples, picked in October, is deemed ripe and ready to be eaten raw, whereas another, growing in the same field, is designated as a "winter variety" which is unfit for consumption until several months later, unless it is cooked, is rarely considered by the consumer. The fact of a difference between fall and winter, or early fall and late fall varieties, has become associated in his mind with color, form, type and names — rarely with anything directly suggestive of a real chemical or biochemical basis for these distinctions.

In many of these plant products the act of ripening is attended by a process of real respiration, in which carbon dioxid is produced and given off with more or less vigor by the part involved. Usually this concerns primarily a conversion of insoluble carbohydrates into soluble sugars, which latter are then in part used up in the respiration functions. Ripening effects a loss in the total carbohydrate content of the fruit, for example, as well as an attendant development of soluble carbohydrates. Apples which are ripe early have developed a considerable content of sugar by transformation of starch, the content of which is correspondingly decreased. The unripe apple is relatively rich in starch and poor in sugars. The speed with which the ripening changes proceed varies widely with species and varieties of plants as well as with the temperature of the environment. They proceed apart from all connection with the original plant, as we commonly note when green fruit, prematurely removed from its vegetative connection, proceeds to ripen properly.

The United States Department of Agriculture has recognized the desirability of increasing our knowledge of what constitutes "ripening," as is witnessed by two investigations recently reported from the gov-

ernment laboratories at Washington.[1] With respect to the composition of bananas during ripening, they show that the most conspicuous change is the long recognized conversion of starch into sugars. It is most rapid while the fruits are turning from green to yellow. During this period, the respiration rate increases manyfold, becoming greatest at the time when the rate of starch hydrolysis is most rapid. Starch hydrolysis then gradually slackens, later ceasing altogether. Next to the starch and respiration changes, most conspicuous are those of water. The peel loses, while the pulp gains in water by a steady transfer of the latter to it from the peel during ripening. The quantities of protein, ether soluble and mineral matter, show little alteration during this process.

Somewhat comparable changes take place during the storage of an entirely different food product, the sweet potato. The carbohydrate metabolism of this tropical form is different from that of the ordinary variety of potato. Sugar is developed far more readily, with the result that the storage of sweet potatoes is accompanied by considerable losses as a result of decay brought about by micro-organisms which invade the tissues. These destructive changes are not yet wholly preventable by any of the methods of storage in common use.

During its growth, the sweet potato root is characterized, according to Hasselbring and Hawkins,[1] by a very low sugar content. The reserve materials from the vines are almost wholly deposited as starch. Immediately after the roots are harvested, there occurs a rapid transformation of starch into cane sugar and reducing sugars. This initial transformation seems to be due to internal causes, and is largely independent of external conditions. Even at a temperature of 30 C. (86 F.), both cane sugar and reducing sugars accumulate during this initial period in excess of the quantity used in respiration, while during subsequent periods the quantity of reducing sugar diminishes at that temperature as a result of respiration. These initial changes seem to be associated with the cessation of the flow of materials from the vines. In sweet potatoes stored at a temperature of from 11.7 to 16.7 C. (53 to 62 F.), the moisture content remains fairly constant. There is a gradual disappearance of starch during the first of the season (October to March) and probably a reformation of starch accompanied by a disappearance of cane sugar during the latter part of the season (March to June). The changes in reducing sugar are less marked than those in cane sugar. The changes in starch and cane sugar appear in a general way to be correlated with the seasonal changes in the temperature. In sweet potatoes kept in cold storage (4 C., 39.2 F.), there is a rapid disappearance of the starch and an accompanying increase in cane sugar. These changes do not attain a state of equilibrium at that temperature, as the sweet potatoes invariably rot by the action of fungi before the changes have reached their maximum. At both high and low temperatures, cane sugar is the chief product formed by the conversion of starch in the sweet potato. The quantity of invert sugar in the root at any time is comparatively small.

To the casual observer it may seem like a matter of minor import to ascertain why sweet potatoes are sweet and what constitutes a really ripe banana. In these days when the limitations of the seasons are no longer allowed to set restrictions on the food demands of mankind, and when questions of effective economical methods of transportation and storage are seriously studied, it becomes essential for practical as well as theoretical reasons to unravel the details of the biologic processes involved.

1. Gore, H. C.: Changes in the Composition of Peel and Pulp of Ripening Bananas, Jour. Agricultural Research, 1914, iii, 187. Hasselbring, H., and Hawkins, L. A.: Physiological Changes in Sweet Potatoes During Storage, ibid., 1915, iii, 331. The earlier literature is reviewed in these papers.

THE STATUS OF A THERAPEUTIC AGENT IN DIABETES

The lactone or inner anhydrid of alpha-glycoheptonic acid (sold under the name of "hediosit"[1]) was introduced into the therapy of diabetes a few years ago by Prof. Georg Rosenfeld of Breslau, an investigator of carbohydrate metabolism. The features which seemed to recommend it, aside from its lack of toxicity and a very moderate degree of desired sweetness, were the alleged property of decreasing the glycosuria of the diabetic, along with some food value secured by the oxidation of the substance in the organism. The product appeared, therefore, to resemble glucose in its nutritive value, without exhibiting the lack of utilization experienced by the true sugars in diabetics. Hediosit has been fed in quantities of from 10 to 30 grams (3 drams to 1 ounce) per day without obvious untoward results, thus suggesting a means of supplying some energy in addition to antiglycosuric effects. Larger doses may lead to a laxative action.

The quantitative limitations in the use of this new product are such that at best it can replace little food in the dietary, and its value as an energy-yielding compound must be controlled by exact investigation. Studies by Lenel,[2] in Professor Umber's clinic at Charlottenburg-Westend, have an important bearing on the behavior of hediosit. Under normal alimentary conditions it was observed that upward of a quarter of the administered quantities is lost again in the stools. When a laxative effect is present, the loss in this way may amount to as much as 80 per cent. But the quantities remaining in the feces do not represent the entire amount escaping oxidation. The urine likewise con-

1. New and Nonofficial Remedies, 1915, p. 144.
2. Lenel, R.: Die Ausnutzung des Alpha-Glykoheptonsäurelaktons (Hediosit) beim Diabetischen und Nichtdiabetischen, Arch. f. exper. Path. u. Pharmakol., 1914, lxxvii, 335.

tains some of the unchanged product. In some cases Lenel has administered the lactone intravenously in order to insure its entrance into the circulation. Under these conditions as much as 100 per cent. of the introduced substance has been recovered; and the recoveries after oral administration are likewise frequently very considerable, amounting to nearly half of the 20 grams administered.

It had been hoped by the German investigators, following the experience of Abderhalden and others with parenteral introduction of other substances, to develop similarly the production of enzymes, which might be able to metabolize the lactone and thus lead to its more perfect utilization in the organism. As yet there is no evidence that this can be successfully done. In several cases there was an apparent failure to recover the usual large output of the lactone after its introduction intravenously during a series of days. A study of the urines showed, however, that the apparent utilization was due to a retention associated with deficient kidney function. With these suggested limitations in the dosage, as well as the capacity of the organism to oxidize the new compound, its nutrient value as a substitute for the untolerated sugar is exceedingly limited at best. The antiketogenic properties are debated; the antiglycosuric effects uncertain. In view of this, the major claims for what promised to be a useful therapeutic product remain to be more convincingly demonstrated.

Current Comment

PUBLIC EDUCATION IN MARYLAND

The organization of the Council on Health and Public Instruction of the American Medical Association, at the St. Louis meeting in 1910, was a definite recognition of the obligation on the part of the organized medical profession to educate the public, and to make its special and technical knowledge available as far as possible for the guidance of the people. Like all other activities of the American Medical Association this work can reach its highest development only through the coordinating and cooperating work of the state associations. For this reason, each state association was asked to establish a state committee on health and public instruction if it had not already done so, or to delegate this work to one of its existing committees. Many states are now taking up this work. Probably in no state has it been developed to any higher point than in Maryland, in which the work of the Committee on Public Instruction was early inaugurated and has been carried on vigorously and enthusiastically. In a recent issue of the *Bulletin of the Medical and Chirurgical Faculty of Maryland* appears an editorial review of the work of this committee for 1914. After stating that without question this work is one of the most important and valuable factors of the state association activities, attention is called to the health week held in Baltimore, with its accompanying public health exhibit, and to the smaller meetings and exhibitions held throughout the state, as well as to the large number of lectures and public talks on health topics given by members of the faculty in different towns and cities. A noticeable feature is the number of members taking part in this work, thirty-five speakers being furnished from the members of the state society. The subjects were generally popular questions of hygiene. The addresses were given throughout the entire year in churches, schoolhouses, colleges and town halls, and before labor organizations, women's clubs, local business men's organizations and similar bodies. One hundred and eighty such addresses were given throughout the year. The work of the Committee on Public Instruction in Maryland is worthy of commendation and should be duplicated, as far as possible, in each one of our states.

A MODEL CONSTRUCTION CAMP

The construction camp of the United States Reclamation Service at Elephant Butte, N. Mex., where the government is constructing an irrigation plant, is an example of what may be done in a construction camp. It is described by Dr. J. Dale Graham.[1] The camp has 3,000 inhabitants, 1,200 of whom are employees of the Reclamation Service, and there are many families with children. Most of the laborers are single men, and live in cottages or barracks. These are screened, lighted with electricity, sewered and provided with water. Septic tanks are provided for the disposal of sewage, both in the official and the other divisions of the town, which are separate. A regular system of garbage and waste disposal is provided, wastes being burned and edible garbage being hauled from the city and fed to hogs, which are kept a long distance away. Flies in both the upper and lower towns are at a minimum, and fly traps are provided to trap those which do appear. The commissary, where well kept foods at reasonable prices are to be had, is under government control. All markets are screened, and ice and cold storage are provided. Shower baths, urinals and lavatories are provided in men's quarters, and private cottages have modern conveniences. There is a well-equipped hospital containing two private rooms and wards to accommodate twelve beds, or more in an emergency. The personnel includes a physician, a nurse, an orderly and a housekeeper. A consulting surgeon is available. Reports to the engineering department on the medical service, the sanitation of the camp and the statistics of illness, absence from work, etc., are made each ten days, every month and at the end of the year by the head of the sanitary division. The business of the physician of the camp has become not so much to treat the sick as to create and maintain conditions which will keep illness at a low ebb. Physical examination of applicants for work is carried out, vaccination for smallpox and typhoid are required, and it is said that typhoid vaccination has not caused any employee the loss of time from work. In the parts of the town not taken care of by the septic

1. Graham, J. D.: Engineering News, Dec. 31, 1914.

tanks, privies of approved pattern are employed, which are kept in good condition by the use of lime and oil, and are carefully screened. Amusements are systematically provided, and liquor is to the greatest extent kept out of the camp, so that it has not proved to be a nuisance. After three years of experience, Graham concludes that the price of good sanitation in such a place is an eternal fight, but that anything tending to create a better moral and sanitary environment increases the efficiency and output of the employee.

CARCINOMATOUS INVOLVEMENT OF NERVES

The lancinating pain characteristic of carcinoma long since directed attention to the possibility that the attacks of pain depend on direct involvement of the nerves in the affected region. The recorded observations indicate that at least in occasional instances of carcinoma associated with especially severe pain, carcinomatous infiltration of the nerves takes place to such an extent as to constitute a reasonable and tangible explanation of the pain. On the other hand, carcinomatous infiltration of nerves may be encountered without having been associated with even the slightest degree of pain, and of course carcinoma may be associated with pain without demonstrable involvement of the corresponding nerves. The true relationship between pain in carcinoma and the condition of the nerves, consequently, still remains obscure and invites further careful investigation by modern methods. The statement is sometimes made that carcinomatous infiltration of nerves is unusual,[1] but in all probability thorough and systematic examination will show it to occur more commonly than is ordinarily believed. Thus Ernst[2] enumerates single instances of carcinoma originating in a variety of places, in each case of which there was infiltration of the nerves of the region; and Fenger,[3] to whom we owe an early (1874) and exceptionally thorough but overlooked study of this question as it applies to carcinoma of the stomach, found that in four of twenty-nine cases the carcinoma had extended into the end branches and stems of the vagi, forming either separate spindle-shaped swellings or bulbous enlargement of the nerve at its entrance into the tumor.

1. Moschovitz: Virchows Arch. f. path. Anat., 1915, ccxviii, 352.
2. Ernst: Beitr. z. path. Anat. u. z. allg. Path., 1902. Supplement, vii, 29.
3. The Collected Works of Christian Fenger, Philadelphia, W. B. Saunders, 1912, i, 30.

Hydrogen Peroxid as a Household Remedy.—Solution of hydrogen peroxid is an unusually popular household remedy. It is frequently used as a gargle, a mouth wash, and a local application in cuts, burns, and other wounds. The commercial product may be preserved with acetanilid, may contain an excess of acid, or be altogether devoid of free oxygen. The presence of acetanilid, while perhaps not objectionable as such, entails heterogeneous decomposition products that are nauseating if not otherwise harmful. A preparation containing an excess of free acid might do considerable harm when used as a tooth wash, and a preparation that is devoid of free oxygen may be otherwise contaminated and when used on a wound might prove to be a source of infection rather than a preventive.—*Public Health Reports*, Jan. 29, 1915.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

DISTRICT OF COLUMBIA

Red Cross Building Cornerstone Laid.—On March 27, President Wilson and former President Taft assisted at the laying of the cornerstone of the new building for the American Red Cross to be erected at a cost of $800,000 as a memorial to the heroic women of the Civil War. The building is to be completed by April, 1916.

ILLINOIS

Smallpox at the University.—The occurrence of three cases of smallpox at the University at Champaign has led the State Board of Health as a precautionary measure to issue an order that any student not entirely well must not leave the university for the spring vacation until it is shown that he is not suffering from smallpox. This is to prevent possible epidemics at the homes of students. All persons exposed to the disease at Champaign have been required to submit to vaccination.

Fined for Illegal Practice.—J. D. Larson, who is not a physician, confessed to the Winnebago County court at Rockford that he had been practicing medicine without a license. He was fined by the court and warned not to repeat the offense. His methods included telling his patients their ailments after looking into their eyes and then giving them books or tracts to read on the subject. He also prescribed and dispensed some of his own pellets. Although the authorities had much evidence in regard to specific cases, Larson did not fight and it was not necessary to present this evidence. He is still in Rockford and maintains an office with one Campbell, it is said, with a sign on the door reading "Health Home." The public prosecutor's attention has also been called to this.

INDIANA

Physicians Organize.—Physicians of East Chicago met March 9 and perfected an organization, electing Dr. Alexander G. Schlieker, president; Dr. Robert Spear, vice-president, and Dr. Solomon M. Goldberger, secretary and treasurer.

Personal.—Dr. Tilman O. Armfield, secretary of the Elwood Board of Health, was held up and robbed, March 23, presumably by a drug addict as his hypodermic syringe and his supplies of cocain and morphin were taken from him.——Dr. James W. Milligan, chief physician of the Indiana State Prison, Michigan City, has been appointed superintendent to the Southeastern Hospital for the Insane, Madison, succeeding Dr. Edward P. Busse. Dr. Milligan will assume charge of the institution on June 1.——Dr. John A. Lambert, Indianapolis, has been elected medical director of the Meridian Life Insurance Company, Indianapolis.——Dr. Horace R. Allen, Jr., Indianapolis, is spending several months on the Pacific Coast for rest and recreation.——Dr. Albert Seaton, Indianapolis, has been elected assistant medical director of the State Life Insurance Company.——Dr. George W. McCaskey, Fort Wayne, has returned home after several months spent at Lorain, Miss.——Dr. William I. Wolpert, Elizabeth, is reported to be seriously ill with nephritis.

Hospital Notes.—The Bartholomew County Hospital has been erected at Columbus at a cost of $100,000. The institution will be provided with a tuberculosis annex for which a tax levy and bond issue were provided in the law passed by the legislature in 1913.——The contract for a new building of the King's Daughters' Hospital, Madison, has been awarded for $15,000.——The new hospital for Daviess County at Washington was formally opened, March 18. The Graham heirs presented the building and grounds for the Daviess County Hospital Association and the institution has accommodations for fifteen patients.——The formal opening of the free medical clinic of the Floyd County Anti-Tuberculosis League, New Albany, took place March 16. An illustrated address was delivered by F. L. Sampson, secretary of the Hazelwood Sanatorium, Louisville.——Plans are being promoted for a free clinic at St. John's Hospital, Anderson.——The Franklin Tuberculosis Sanatorium Company announces that it has dissolved.

KANSAS

Personal.—Dr. Athens V. Lodge, Kansas City, has been elected grand medical director of the Sons and Daughters of Justice.

State Board Appointments.—Among the appointments made by Governor Capper of Kansas, March 19, are State Board of Health, Drs. Oliver D. Walker, Salina; William M. Earnest, Washington; Charles H. Lerrigo, Topeka; Charles H. Ewing, Larned; Harry L. Aldrich, Caney, and Clay E. Coburn, Kansas City; State Board of Medical Examination and Registration, Drs. George M. Gray, Kansas City; Lewis A. Ryder, Topeka; Charles W. Jones, Olathe, and Albert S. Ross, Sabetha, and Advisory Commission Sanatorium for tuberculosis patients, Drs. William H. Bauer, Sylvia, and David R. Stoner, Quinter.

KENTUCKY

Personal.—Dr. Samuel M. Stedman, Versailles, while cranking his automobile, March 19, fractured his arm.——Dr. Frank Boyd of the Illinois Hospital staff, Paducah, has been appointed district federal medical examiner.——Dr. Moreau S. Browne, Winchester, is reported to be critically ill at his home following an attack of influenza.

Hazlewood Sanatorium Opened.—Hazlewood Sanatorium, Louisville, for the treatment of tuberculosis, was opened April 1. A medical advisory board has been appointed composed of nine residents of Jefferson County and an equal number from the state at large. The advisory board from Jefferson County consists of Drs. Ap Morgan Vance, chairman; J. Rowan Morrison, secretary; and Drs. Cuthbert Thompson, Irvin Lindenberger, Ben. C. Frazier, J. Royden Peabody, Frank W. Fleischaker, Thomas L. Butler and Henry Enos Tuley. The board is advertising for a resident physician.

LOUISIANA

New Society Organized.—Physicians of Assumption Parish met at Napoleonville, March 22, and organized the Assumption Parish Medical Society with a charter membership of seven. Dr. L. E. H. Duffel was elected delegate to the State Medical Society.

Personal.—Dr. Joseph A. Estopinal, Arabi, St. Bernard Parish, has been appointed chief of the ear, nose and throat clinic of the Illinois Central, and Yazoo and Mississippi Valley railroads.——Dr. William F. Pettit, New Orleans, was painfully injured in a collision between his motor car and a grocery truck, March 20.

Hygiene Lectures.—Superintendent Gwinn of the New Orleans Normal School has organized a lecture course on "The Medical and Social Aspects of Hygiene." The lectures are being given on Fridays. They commenced on March 26 and will continue until May 28. The lecturers and their subjects are as follows:

March 26—Dr. C. C. Bass, "Prevention of Malaria."
April 9—Judge A. H. Wilson, "Physical Health and Juvenile Delinquency."
April 16—Dr. J. A. Gorman, "Oral Hygiene."
April 23—Dr. Dandridge P. West, "Nutrition in Infancy and Childhood."
April 30—Dr. Isadore Dyer, "Hygiene of Skin."
May 7—Dr. Marcus Feingold, "Hygiene of the Eye."
May 14—Dr. Chas. J. Bloom, "Significance of Physical Measurements of Children."
May 21—Dr. E. M. Hummel, "Nervous and Mental Hygiene."
May 28—Dr. Edmund Moss, "How Teachers May Help the Medical Inspector."

MARYLAND

The Fight Against the Mosquito Pest.—On March 23, Surgeon-General Gorgas came to Baltimore to confer with the city officials regarding the abolition of the pest mosquitoes. General Gorgas expressed the opinion that it is impossible to destroy the mosquito absolutely, and that it is almost wholly a matter of drainage, thereby removing the breeding places of the mosquito.

Personal.—Dr. Fred Caruthers, returning to his home in East Baltimore, March 26, was held up and robbed by a negro.——Dr. J. Carroll Monmonier, Jr., Catonsville, has been elected chairman of the committee on sanitation of the Confederated Civic Association of Baltimore County; Dr. Albert L. Wilkinson, Raspeburg, chairman of the subcommittee on public instruction; Dr. William J. Todd, Mt. Washington, chairman of the subcommittee on sewerage and water supply, and Dr. Frederick Beitler, Halethorp, chairman of the subcommittee on sanitary legislation.——Dr. Clapham P. King, Baltimore, one of the physicians to the Serbian Red Cross unit, who has been ill with typhus fever in Serbia, is reported to be convalescent.——Dr. Jacob H. Hartman, one of the founders of the Baltimore Eye, Ear and Throat Hospital, was given a banquet, March 18, at which a handsome silver service was presented to him on behalf of the staff of the hospital.

MASSACHUSETTS

East Boston Physicians Organize.—Physicians of East Boston met March 19 and organized the East Boston Medical Association, electing Dr. Frank H. Tilton, president; Dr. Robert Bonney, vice-president; Dr. John D. Taylor, secretary, and Dr. Alexander L. McLaren, treasurer.

Proposed Hospital for Cambridge.—Plans have been prepared for the proposed Cambridge City Hospital, for which $150,000 has been appropriated by the legislature. A site has already been secured at a cost of $60,000 on which a series of buildings will be erected consisting of a main hospital building, a main administration building with two wings, two stories and basement in height, with all necessary equipment, including solariums, outpatient and Roentgen-ray departments, etc.

MICHIGAN

State Board Named.—The following five members of the State Board of Registration in Medicine were appointed by the governor, March 17: Drs. Arthur M. Hume, Owosso; Enos C. Kinsman, Saginaw; Duncan A. Cameron, Alpena; Frederick C. Warnshuis, Grand Rapids, and Arthur L. Robinson, Allegan.

Personal.—Dr. George H. Southwick, Grand Rapids, is ill with smallpox at the Municipal Isolation Hospital.——Dr. Alexander H. Scott, St. Joseph, is reported to be seriously ill at the home of his daughter in Brunswick, Ga.——Dr. Celestin Le Golvan, Iron Mountain, has started for France to serve in the army.

Hospital News.—The new tuberculosis hospital of Detroit, which is to form one of the units of the Hermann Kiefer Hospital, will be built on Schmittdiel Avenue and will consist of a main portion seven stories high with two wings, six stories high and will accommodate 345 patients. The building will be of reenforced concrete, brick and stone and will cost about $400,000.——A meeting of the citizens of Cheboygan was held March 16 to discuss a proposed hospital for the city.——The Dodge Brothers automobile factory in Detroit has a fully equipped hospital with separate wards for men and women, an operating room, physician's room, etc.

MINNESOTA

President Remsen to be Orator at University.—Dr. Ira Remsen, president emeritus of Johns Hopkins University, has been selected to deliver the principal address at the formal opening of the new chemistry building of the University of Minnesota, May 24.

Personal.—Dr. Edwin S. Muir, mayor of Winona, who underwent operation at the Eitel Hospital, Minneapolis, March 15, is reported to be out of danger.——Dr. Arthur B. Ancker, superintendent of the City and County Hospital, St. Paul, and Mrs. Ancker, are taking a trip to Panama via New York.——Dr. L. Emil Belcourt, Argyle, has enlisted in the Canadian Army Medical Corps.——Dr. E. J. Thompson, Finlayson, is said to be seriously ill at his home.

NEW MEXICO

Still No Medical Practice Act.—The third session of the legislature since New Mexico was admitted to the Union has adjourned without enacting a new medical practice act. At each session a bill is presented. The first legislature passed a law, backed by the New Mexico Medical Society, but the governor vetoed it. This year Senator F. F. Doepp of Carlsbad, himself a physician, introduced a bill amending the present practice act in important particulars. It passed the Senate but died in the House. The usual arguments that it was a law to create a medical trust backed by the American Medical Association were made by newspapers. The usual statements that "we would be prevented from taking what we like for our own belly-ache," were made. The fight will be continued and some day it is hoped New Mexico will join the rank of progressive states in the matter of a medical practice act. As it is now, it is the dumping ground for all the other states in the Union.

NEW YORK

Hospital for Babylon, L. I.—Elbert C. Livingston has given a plot of ground valued at $5,000 as a site for a hospital provided the South Side Hospital Association of Babylon, L. I., shall erect a hospital thereon valued at $25,000.

Funds for Adam Hospital.—Dr. John H. Pryor made a plea before the board of aldermen of Buffalo, March 16, for the J. N. Adam Hospital, Perrysburg, and obtained a maintenance appropriation of more than $80,000. This makes a total allowance for the hospital of $134,084 for salaries and maintenance.

Takes Charge of Sanatorium.—Dr. Harry Jay Brayton, West Brighton, for three years a member of the Iola Sanatorium, Rochester, has been appointed superintendent of the Municipal Tuberculosis Sanatorium, Syracuse, and assumed his duties April 1. The sanatorium is expected to open on July 1, and Dr. Brayton has charge of the purchasing of the furniture and equipment and employment of all assistants and help.

New Christian Science Bill Reported Favorably.—A new bill designed as an amendment to the state health law was reported favorably by the assembly judiciary committee on March 24. The bill reads: "Nothing in this act shall be construed to affect the practice of Christian Science for the relief of the sick and suffering provided no drugs or other material remedies are employed, and provided further that no quarantine or sanitary regulations are violated."

Boylan Law Strengthened.—At the conference between delegations interested in the drug crusade in New York City and representatives of the State Board of Pharmacy and the State Pharmaceutical Society, a compromise antidrug bill was agreed upon which will strengthen the Boylan law. Under the new bill, which is called the Bloch bill, a druggist can refill a prescription containing a habit-forming drug only for the person for whom it was originally compounded. Physicians must make a physical examination of a patient before giving him a drug cure. A bill to prevent the use of habit-forming drugs in patent medicines will be urged next years by Howard Clark Barber, superintendent of the Society for the Prevention of Crime.

New York City

Personal.—Kings County Medical Society has adopted resolutions of unqualified endorsement of the administration of Dr. Joseph H. O'Connell as health officer of the port of New York.——The will of the late Dr. Edward N. Hassenmeyer, who died April 30, 1914, makes his father, Augustus Hassenmeyer, the sole beneficiary.

Health Department Acts for Industrial Hygiene.—Health Commissioner Sigismund S. Goldwater has completed plans for the formation of a division of industrial hygiene which will be part of the bureau of infectious diseases. A plan of work has been drawn up which includes a general industrial survey and the location of unhygienic plants. The new division will be in charge of Dr. Louis I. Harris, who will be assisted by Prof. W. Gilman Thompson.

Clinical Society Organized.—The New York Throat, Nose and Lung Hospital Clinical Society has been organized at that institution with the following officers: president, Dr. Theodor Blum; vice-president, Dr. Vincent J. Orlando; secretary, John L. Courrier, D.D.S.; and treasurer, Dr. Timothy D. Sullivan. The first regular meeting will be held April 15, at the hospital at 259 East Fifty-Seventh Street.

Transfer of Quarantine to Federal Government.—The Chamber of Commerce of New York in a report to the council favors the transfer of the local quarantine affairs of the port of New York to the federal government. The service has cost the city $22,000 a year. A new detention hospital will soon be required, and this will cost the city a quarter of a million. The local service has been effective, but it is believed it may be improved under government supervision.

Hospital Buys Site.—The trustees of the Presbyterian Hospital have taken an option of the former American League baseball grounds on Washington Heights. This tract of ground contains about six city blocks and is valued at $2,000,000. The purchase of this site has been made possible by the bequest of the late John S. Kennedy, by whose will the hospital received $2,500,000. It is planned to use a large part of the site for hospital purposes, but considerable space will be used by buildings for special purposes, scientific and educational, in connection with Columbia University. No plans have yet been made for the disposition of the present hospital property on the Middle East Side.

Cancer Lectures and Clinics.—The Faculty of the Cornell University Medical College announces a course of instruction on cancer, for senior students and graduates in medicine, of eighteen lectures to be given at the medical college on Tuesdays and Thursdays from March 30 to May 27. Coincident with the lectures there will be a series of clinics in two sections at the General Memorial Hospital at One Hundred and Sixth Street and Central Park, West, on Mondays and Wednesdays from 9 a. m. to 12 noon. The lectures will be delivered by Drs. Richard Weil, Stanley R. Benedict, James Ewing, Lewis G. Cole, Arthur F. Holding, William B. Coley, Charles L. Gibson, Edward L. Keyes, Jr., Harold C. Bailey, Burton J. Lee, John A. Hartwell, H. H. Janeway, Silas P. Beebe and Arthur F. Coca, and the clinics will be given by Drs. Richard Weil, H. H. Janeway, Arthur F. Holding, William B. Coley, William A. Downes, George H. Mallett and Silas P. Beebe.

NORTH CAROLINA

Hospital News.—The Wake Hospital, Raleigh, erected at a cost of $75,000 will be completed in May.——Plans have been perfected by the Associated Charities of Charlotte for the establishment of a free medical dispensary to be located in the basement of the city hall.

Personal.—Dr. Henry F. Long, Statesville, suffered a loss of $4,000 by the burning of his house on March 18.——Dr. Samuel P. Burt, Louisburg, was injured by the overturning of his automobile, March 18.——Dr. John C. Montgomery, Charlotte, who has been under treatment in Hot Springs, Ark., on account of rheumatism, is reported to be much benefited.

OREGON

New Medical Building Assured.—An official report states that the Oregon legislature has made an appropriation of $50,000 for the first building on the new campus of the University of Oregon, Department of Medicine.

Suggests Destruction of Coyotes.—Dr. Calvin S. White, Portland, state health officer, has given it as his opinion that the best and most sure remedy for the rabies, which is exceedingly prevalent in Eastern Oregon, is the destruction of coyotes, among which the disease has been found.

Personal.—The University of Oregon, Department of Medicine, has secured the services of Dr. Harold B. Myers, Portland, formerly connected with the University and Bellevue Hospital Medical College of New York City, as professor of materia medica and pharmacology, and of Dr. Howard D. Haskins, Cleveland, formerly connected with Western Reserve University, School of Medicine, as professor of physiologic chemistry.——Dr. Earl V. Morrow, Marshfield, has left for New York City on his way to Calais, France, where he will enter the American Red Cross service.——Dr. Earle B. Stewart has been appointed physician to the Oregon Soldiers' Home, Roseburg, vice Dr. Elmer V. Hoover, resigned.——Dr. Harry F. McKay, Portland, has been reappointed a member of the State Board of Medical Examiners.

PENNSYLVANIA

General Hospital for Connellsville.—The physicians of Connellsville are planning a general hospital to supplant the cottage state institution, which can treat only accident cases. Patients suffering from sickness or in need of surgical attention have to go to Pittsburgh.

Two New State Hospitals Planned.—Two new insane asylums will be built by the state according to the terms of bills being drafted by Judge Isaac Johnson, Bromley Whorton and F. J. Torance of the Board of Public Charities. One of the institutions will be in the eastern end of the state and the other in the western and each will accommodate about 1,500 patients. The bills provide for the appointment of a commission to select and buy sites.

Personal.—Dr. Wilbert L. Grounds, Emporium, has been appointed assistant surgeon at the Roaring Springs Hospital.——Dr. Charles B. Jones, Summerville, was awarded damages amounting to $15,000 in his suit against the Pennsylvania Coal and Coke Corporation, March 18. The injuries for which damages of $60,000 were sought, were caused by the crossing of telephone wires and high tension current lines which so charged a telephone line which the plaintiff was using, that he sustained injuries resulting in the loss of both thumbs and severe nervous shock.——Dr. Edwin S. Dorworth, Belefonte, was the guest of honer at a meeting and dinner of the Centre County Medical Society, March 11.

Philadelphia

Hospital News.—The new medical building of the Jewish Hospital, erected at a cost of $70,000, was opened for inspection by the public, March 21. The building is of the most modern fire-proof construction and three stories in height. The second and third floors each contain two wards and sun parlors.

Medical Council.—The new Federated Medical Council in Philadelphia, a central union of existing bodies to educate the public along health lines, includes Dr. Samuel McClintock Hammill, chairman; Dr. William N. Bradley, secretary; and Drs. Howard Carpenter, Charles A. E. Codman, Charles A. Fife, C. Lincoln Furbush, J. Claxton Gittings, Howard K. Hill, Henry D. Jump, William D. Robinson and John F. Sinclair.

Maternity Opened.—The new Maternity of the Germantown Hospital, erected at a cost of about $35,000, was opened to receive patients, March 1. The building is of brick, 38 by 140 feet, and is divided into two portions, one for partly free patients and the other for pay patients. In the first portion there is one large ward, two small wards, operating, sterilizing and linen rooms, etc., the pay wing being devoted entirely to private rooms.

Graduate Course in Tuberculosis at Blockley.—The tuberculosis wards of the Philadelphia General Hospital offer unusual facilities for postgraduate instruction in diseases of the lungs and physical diagnosis. The chiefs of staff of the tuberculosis department will give a postgraduate course of daily instruction, except Saturdays and Sundays, to cover the period of three weeks from Monday, April 12 to Friday, April 30, inclusive. The success of the new graduate course in neurology at the same institution seems to warrant this advance in medical education. The members of the staff will take personal charge of the instruction from 4 to 6 p. m. daily. Aside from bedside teaching, clinical talks on terms and definitions, methods of physical examination and diagnosis, principles of social service work, treatment, specific therapy, immunity, etc., will be included.

SOUTH CAROLINA

Association Organized.—Physicians of Lancaster County met in Lancaster, March 13, and organized the Lancaster County Medical Association and elected the following officers: president, Dr. Jeff D. Funderburk, Lancaster; vice president, Dr. Walter C. Twitty, Kershaw; secretary-treasurer, Dr. John A. Winstead, Lancaster.

Hospital Incorporated.—The Magdalene Hospital has been incorporated at Chester with a capital stock of $20,000. The officers of the corporation are: Dr. Stewart W. Pryor, Chester, president and treasurer; Drs. Ralph H. McFadden, Yorkville, and George A. Hennies, Chester, vice presidents; and Dr. Henry B. Malone, Chester, secretary.

Personal.—Dr. Thomas W. Jackson, health officer of Spartanburg, has been assigned to duty with the Serbian sanitary force and has sailed for Europe.——Dr. Julius H. Taylor, Columbia, has resigned as a member of the board of regents of the State Hospital for the Insane.——Dr. George Benet, Columbia, has started for Europe with the Harvard Medical School contingent for service in the American Hospital, Paris.——Dr. Samuel M. Pitts, Saluda, sustained a loss of $1,500 by fire, March 10.

VIRGINIA

Refuses to Tax Physicians.—The state senate has refused to restore the license tax on physicians and surgeons which was repealed last year.

The Work at Pine Camp.—The Municipal Tuberculosis Colony, Richmond, has had an average of thirty-three patients a month during the past year. During the last three months of the year the average was reduced on account of the insufficiency of funds. The average daily cost per patient has been $1.15.

Personal.—Dr. Allen W. Freeman, Richmond, has resigned as assistant state health commissioner to become epidemiologist for the U. S. Public Health Service at Washington.——Dr. Isaac H. Leion, Richmond, is said to have been fined $100 in the federal district court, recently, for using the emblem of the American Red Cross for trade and advertising purposes.

WISCONSIN

Schools Closed on Account of Epidemic.—All schools, theaters and the public library in Antigo were closed during the second week of March on account of an epidemic of scarlet fever. Twenty-five cases of the disease were reported.

Personal.—Drs. Michael E. Corbett and Bernard C. Gudden, both of Oshkosh, have been appointed trustees of Sunnyview, the new Winnebago County Tuberculosis Sanatorium.——Dr. Joseph C. Elfers, Sheboygan, has returned from abroad.——Dr. William W. Reed, Jefferson, recently celebrated his ninetieth birthday anniversary.

Hospital Items.—At a meeting of the citizens held in Mondovi, March 9, the proposition of buying the Mondovi Hospital from Dr. Philip B. Amunson, Mondovi, was considered. A soliciting committee was appointed to raise $10,000, and on the securing of this fund permanent organization is to be perfected.——At a meeting of the board of directors of the Wisconsin Deaconess Hospital, Green Bay, bids were submitted for the erection of a new building which is to cost about $60,000.

CANADA

Personal.—Dr. W. H. Jakeman has been appointed bacteriologist to the board of health, New Westminster, B. C.——Dr. Andrew Croll, Saskatoon, vice-president of the Saskatchewan Medical Society, is on the staff of the General Hospital with the Second Canadian Contingent.

Manitoba Medical Society.—The joint annual meeting of the Manitoba Medical Society and the Winnipeg Medical Society took place on February 19. Dr. Herbert A. Gordon, Portage La Prairie, delivered the presidential address which dealt with the advance of modern therapeutics. The following officers were elected: president, Dr. John S. Poole, Neepawa; secretary, Dr. Roslyn B. Mitchell, Winnipeg (reelected).

University News.—The following medical graduates have been elected to serve six years on the Council of Queen's University, Kingston: Victoria Reid, M.D., Toronto; Thomas H. Farrell, M.D., Utica, N. Y.; Edward C. Watson, M.D., Detroit. Queen's University medical faculty has asked the Canadian Militia Department for a definite reply with regard to its offer of a stationary hospital for overseas service. Action is imperative at the present time, as many students have offers of hospital positions in both the United States and Canada. Major Frederick Etherington, M.D., Kingston, who has charge of the recruiting for this hospital, is besieged with applications from doctors and nurses. The staff of the hospital will number 135.

GENERAL

Grant for Medical College in China.—The China Medical Board of the Rockefeller Foundation has recommended a grant of $16,200 annually for five years to the Yale Medical College, Changsha, China. The money is to be used for the support of six American physicians at the institution.

Pediatricians to Meet.—The annual meeting of the American Pediatricians' Society will be held May 24 to 26 at the Laurel House, Lakewood, N. J., under the presidency of Dr. George N. Acker, Washington, D. C. Dr. Samuel S. Adams, 1801 Connecticut Avenue, Washington, is secretary of the association.

A Warning.—The attention of physicians is again called to the activities of certain young men in Pennsylvania who are attempting to secure subscriptions for THE JOURNAL and offer magazines through a bureau which they call the National Educational Association, the plea being based on the desire of the young men to secure free scholarships. When last heard of the scheme was being pushed in Philadelphia.

Higher Standards of Preliminary Education.—The University of Virginia, Department of Medicine, and the School of Medicine of the University of North Carolina, announce that beginning in 1917 the requirements for admission will be increased to two years (sixty semester hours) of collegiate work, including courses in physics, chemistry, biology and French or German.——The Eclectic Medical College, Cincinnati, announces that hereafter one year of collegiate work, including the specified sciences, will be required.

Pathologists and Bacteriologists Meet.—Arrangements have been completed for the meeting of the American Association of Pathologists and Bacteriologists in St. Louis, April 2 and 3. The sessions will be held at the Washington University Medical School and at the St. Louis University. The headquarters of the association will be at Hotel Jefferson. Invitation luncheons will be provided for members of the associa-

tion by the Washington University Medical School and by the St. Louis University Medical School. The annual dinner of the association will be at the University Club, Friday, April 2, at 7 o'clock.

Consolidating Service Sanatorium.—Col. George E. Bushnell, M. C., U. S. A., Fort Bayard, N. Mex., has been detailed to visit the Public Health Service Sanatorium at Fort Stanton, N. Mex., and the Navy Sanatorium at Las Animas, Colo., and report on the advisability of consolidating these institutions with the United States General Hospital (the Army Sanatorium) at Fort Bayard, N. Mex. Colonel Bushnell's report will be considered by the secretaries of the Army, Navy and Treasury. Colonel Bushnell is the present commandant of the Fort Bayard institution and during his regime this old adobe army post has been converted into the finest institution of its kind in the world at an expenditure of $1,000,000.

Prize for Social Hygiene Pamphlet.—The American Social Hygiene Association has been offered a prize of $1,000 by the Metropolitan Life Insurance Company to be awarded to the author of the best original pamphlet on social hygiene, for adolescents between the ages of 12 and 16 years, approved by a committee of judges to be selected by the association. The contest closes July 31, 1915, at midnight. Manuscripts must be typewritten, on one side only of plain white paper, 8 by 10½ inches; must be in English; must not exceed 3,500 words, and must not have been previously published. The winning manuscript is to become the property of the donor of the prize, and the right to purchase any manuscript submitted at 5 cents a word is reserved by the donor and the association. Manuscripts and requests for further information should be addressed to the American Social Hygiene Association, Inc., 105 West Fortieth Street, New York, N. Y.

Bequests and Donations.—The following bequests and donations have recently been announced:

German Hospital, Chicago, $5,000 by the will of Jacob Rehm.

Mercy Hospital, Chicago, two-thirds of the estate of Mrs. Harriet Haynes, St. Charles, valued at $500,000.

Presbyterian Hospital, New York City, $20,000; New York Association for Improving the Condition of the Poor, St. Vincent's Hospital, Hospital Guild of the New York Medical College, and Bellevue Hospital, each $10,000; New York Ophthalmic Institute, $5,000, by the will of William Washington Cole.

White Plains (N. Y.) Hospital, $2,500, by the will of Mrs. Clara F. Hitchcock.

Clearwater, Fla., Hospital, $100,000, for endowment fund, donation by Morton F. Plant.

Clark County, Ky., Medical Society, a subscription of $1,000 as a donation to the Winchester (Ky.) Hospital Fund.

Mercy Hospital, Kansas City, a donation of a large house and grounds valued at more than $50,000, by the will of J. C. Gates, Kansas City.

Official Bulletins on Narcotic Drugs.—A number of inquiries have been received regarding the official bulletins containing the laws and regulations, both state and national, on habit-forming drugs. Full information on this subject can be secured from government publications. The full text and preliminary regulations of the Harrison law are contained in Internal Revenue Regulations No. 35, issued Jan. 15, 1915. Supplementary regulations appear in Treasury Document 2172, issued March 9, 1915. These publications relate to the federal law. In reprint No. 240 from the Public Health Reports of Nov. 13, 20 and 27, 1914, supplement to Public Health Bulletin No. 56, a special bulletin published by the United States Public Health Service, can be found all the state laws and regulations relating to poisons and habit-forming drugs. These three pamphlets contain full information regarding the law on this subject. The passage of the Harrison law has stimulated the enforcement of state laws and has made it possible, through the system of records provided for, to enforce some of the state laws that have heretofore been unenforcible.

Pan-American Congress to Meet.—The seventh Pan-American congress will meet in San Francisco, June 17 to 21, inclusive. It assembles pursuant to invitation of the President of the United States issued in accordance with an act of Congress approved March 3, 1915.

The countries and colonies embraced in the Congress are the Argentine Republic, Bolivia, Brazil, Canada, Colombia, Cuba, Chile, Costa Rica, El Salvador, Ecuador, Guatemala, Honduras, Haiti, Hawaii, Mexico, Martinique, Nicaragua, Panama, Paraguay, Peru, Santo Domingo, United States, Uruguay, Venezuela, British Guiana, Dutch Guiana, French Guiana, Jamaica, Barbadoes, St. Thomas and St. Vincent. The organization of the Congress is perfected in these countries and the majority of them have signified their intention to be represented by duly accredited delegates.

The Congress will meet in seven sections, viz.: (1) Medicine; (2) Surgery; (3) Obstetrics and Gynecology; (4) Anatomy, Physiology, Pathology and Bacteriology; (5) Tropical Medicine and General Sanitation; (6) Laryngology, Rhinology and Otology; (7) Medical Literature.

All members of the organized medical profession of the constituent countries are eligible and are invited to become members. The membership fee is $5 and entitles the holder to a complete set of the transactions. Advance registrations are solicited and should be sent with membership fee to the treasurer, Dr. Henry P. Newman, Timken Building, San Diego, Cal.

The Palace Hotel will be headquarters.

The first Pan-American medical congress was most successfully held in the United States in 1893. Five intervening congresses have been held in Latin-American countries. The officers are Charles A. L. Reed, president, Cincinnati; Ramon Guiteras, secretary-general, New York City; Harry M. Sherman, chairman, committee of arrangements, San Francisco; Philip Mills Jones, special committee on hotels, San Francisco.

FOREIGN

Trypanosomiasis Contracted in Research Work.—Our Italian exchanges state that Prof. A. Lanfranchi, director of the veterinary institute of pathology at Bologna, contracted trypanosomiasis two years ago in the course of his six years' study of trypanosomes. He then took a course of treatment at the Paris Pasteur Institute and was apparently cured, but the trypanosomiasis has recently broken out again. He has gone to Paris for treatment.

Deaths in the Profession Abroad.—G. Forssner, a leading Swedish clinician, professor of internal medicine at the University of Upsala, succumbed January 19 to edema of the glottis in the course of an acute infection of the throat, aged 38.——H. Petersson, a prominent member of the national public health service in Sweden, aged 58.——A. Marcacci, professor of physiology at the University of Pavia and author of numerous articles on experimental physiology and physiologic chemistry.——Giuseppina Cattani, privat-docent for general pathology at Turin and later at Bologna, one of the first women to be admitted to the practice of medicine in modern Italy, aged 55.——The cable brings word of the death of another victim to exanthematous typhus among noted specialists in infectious diseases, Prof. Georg Cornet of Berlin, aged 57. He was the first to discover the tubercle bacillus outside of the body and preach its non-ubiquity, thus providing a basis for prophylaxis. He was assistant to Robert Koch in the Institute for Infectious Diseases at Berlin, and the list of Cornet's works, especially on tuberculosis, is long and imposing.

WAR NOTES

Personal.—Dr. Rufus A. Van Voast, Cincinnati, who is on duty as an auxiliary surgeon with the Second Regiment of the French Foreign Legion, has written urging the Americans to aid the French in the campaign being waged against typhoid fever.——Dr. Charles McDonald of Washington, head of the American War Relief Hospital in Budapest, who recently arrived in New York, predicts that when warmer weather comes typhoid will become very prevalent in the Austrian army. He says conditions, relative to sanitation in the camps, are similar to those prevailing in the American camps in 1898. Conditions among the wounded are deplorable. As many as 70,000 wounded had been in Budapest at one time.

Oversupply of Hospital Trains in Germany.—A Berlin exchange announces that the hospital trains that have been equipped by various organizations, municipalities and private beneficence now number over 150, and far exceed the demand. Some of these trains stand unused on the sidings for weeks at a time, and hence the Red Cross calls a halt on further donations of the kind, saying that the capital could be used to better advantage otherwise.

Results of Antityphoid Inoculation.—A statement was recently made in the House of Commons by the British Under-Secretary of State for War that only 421 cases of typhoid fever had developed in the British forces during the present war and that of these, 305 had not been inoculated within two years. Among those who had been inoculated within two years, there was only one death and this individual had received only one inoculation instead of the two provided for by the regulations.

High-Speed Bullets Do Not Cauterize.—Dr. Alexis Carrel asserts that the theory that the speed of steel-jacketed bullets of high velocity is sufficient to generate heat and cauterize wounds, is incorrect, on account of the variation in the speed of the bullets at the point of contact. He finds that the wounds caused by projectiles are much less serious than in former wars and confirms his former assertion that the most serious cases in the great majority of wounds that become infected are due to shrapnel.

Prophylaxis of Epidemics in Austria.—The authorities in Styria, that province of Austria of which Graz is the capital, have ordered that linen or cotton napkins are not to be used for the present in public eating and drinking places. Paper napkins are to take their place and are to be burnt after once using. A placard to this effect has to be posted in each restaurant and saloon.——All men going to the front in Austria are now systematically vaccinated against typhoid, smallpox and cholera. In case time does not permit, the course for the latter may be completed at the front.

The Need of England for Medical Officers.—The current issue of the London *Lancet* calls attention to a need for medical men. Alfred Keogh, Director-General of the Army Medical Service, states:

1. The need of medical men, both for home and foreign service, is acute. We want every qualified man who is physically fit and willing to serve.

2. We are in special need of general practitioners, but would be glad to take on expert surgeons, ophthalmologists, radiographers, etc.

3. We could give suitable men immediate employment.

4. At present we are not, except in special cases, sending men over 40 years of age overseas, but we should gladly take on older men for home service.

5. We do not wish to denude the country of civil practitioners, but every man who can arrange for his work to be done at home should come forward as early as possible if we are to keep up an adequate supply of medical attendance to our armies in the field. This is really a national emergency, and we hope that the medical profession, who have already done so much, will assist the responsible authorities to meet it.

Should any qualified man wish to obtain a temporary commission in the Royal Army Medical Corps he should apply to the Secretary, War Office, Whitehall, S. W., for the necessary forms.

Aid for Belgian Physicians.—The report of the treasurer of the committee of American physicians for the aid of the Belgian profession, for the week ending March 27, 1915, lists the following contributions:

Dr. H. N. Torrey, Detroit, Mich.	$ 10.00
Faulkner County Medical Society, Conway, Ark.	25.00
Newburyport Medical Club, Newburyport, Mass.	20.00
Lieut. Col. F. P. Reynolds, M.C., U. S. A., Honolulu, H. T.	25.00
Dr. Waldo Richardson, Seattle, Wash.	5.00
Mrs. O. W. Johnson, Racine, Wis.	5.00
Dr. Joseph Brettauer, New York, N. Y.	25.00
Dr. Lewis Gregory Cole, New York, N. Y.	25.00
Dr. J. N. Hall, Denver, Col.	5.00
Dr. J. B. Rogers, Independence, Ia.	5.00
Medical Society of the Co. of Westchester, White Plains, N. Y.	25.00
Dr. Alex. Marcy, Jr., Riverton, N. J.	10.00
Dr. S. R. Woodruff, Bayonne, N. J.	5.00
Dr. G. C. McMaster, Pittsburgh, Pa.	5.00
Dr. Charles G. Mixter, Boston, Mass.	10.00
Dr. S. G. Laws, Spartanburg, S. C.	5.00
American Surgeons' Clinical Tour of 1914, Galesburg, Ill.	150.75
Colorado Chapter of A. M. P. O. Medical Fraternity, Denver Colo.	50.00
Boston Society of Psychiatry and Neurology, Boston, Mass.	100.00
Routt County Medical Society, Steamboat Springs, Colo.	10.00
Dr. Bertram M. Bernheim, Baltimore, Md.	10.00
Receipts for week ending March 27	$ 530.75
Previously reported receipts	5,221.50
Total receipts	$ 5,752.25
Previously reported disbursements:	
1,625 standard boxes of food @ $2.20	$3,575.00
715 standard boxes of food @ 2.30	1,644.50
Disbursements for week ending March 27:	
230 standard boxes of food @ $2.30	$ 529.00
Total disbursements	$ 5,748.50
Balance	$ 3.75

F. F. SIMPSON, Treasurer.
5 Jenkins Arcade Bldg., Pittsburgh, Pa.

Typhus Fever in Serbia.—Of the twelve American Red Cross trained nurses and the six surgeons sent to Gevgalia in November, nine nurses are said to be ill with typhus, three physicians are ill with the disease and one physician has died.——It is said that there have been already 50,000 deaths as the result of this disease and that more than sixty physicians have died.——It is reported that spotted fever is assuming threatening proportions in the Balkan States. It is said that the chief of the Serbian Army staff, Surgeon-General Arangich, and the court physician, Dr. Nicoleavitch, have died and that in one day fourteen Serbian officers died in Nish.——In Monastir the death rate is said to be about a dozen a day and in the small town of Powarevatz more than 1,000 deaths have occurred from the disease.——It is reported under date of March 15, that the epidemic of typhus fever in Serbia is diminishing.——The Bulgarian authorities are adopting sanitary measures to prevent the introduction of typhus fever into that country.——It is reported that Dr. Ryan, in charge of the American Red Cross units, has more than 2,900 patients under his care, principally of typhus fever.——At Gevgalia there were 1,400 cases in charge of Dr. James F. Donnelly, who later died from the disease.—— The South Serbian American Red Cross work is under the direction of Drs. Ethan Flagg Butler and Ernest P. Magruder, Washington, D.C., who remained with their assistants, both surgeons and nurses, in the typhus-infected region until they were directed to remove to Saloniki.

LONDON LETTER

LONDON, March 19, 1915.

The War

THE BRITISH RED CROSS

The number of auxiliary home Red Cross hospitals accepted by the War Office is now 816 containing 22,724 beds. Ten motor ambulance kitchens have been completed for the front to minister to the wounded before they reach the hospital base. These vehicles have been designed to avoid as much as possible rattling, spilling and breakage. Urns, bowls and cooking utensils have all their allotted niches, while there is a gross of enameled mugs distributed in wire trays convenient for carrying to the wounded. At the further end of each kitchen is the boiler for hot water with deep cooking "dixies" for making stews, cocoa, porridge, etc., while there are also a gas ring, a sink and a serving hatch. The kitchens already in use at the front have been very much appreciated.

THE SCARCITY OF PHYSICIANS IN CIVIL PRACTICE

The scarcity of physicians in civil practice as the result of the war has been described in previous letters to THE JOURNAL. With the formation of the new army, which is so much greater than what existed at the outbreak, the demand for physicians has increased correspondingly and the scarcity in civil practice has become greater. The present position is well shown in an address on "The Medical Profession and the War" delivered in the Royal College of Surgeons of Edinburgh by Dr. Norman Walker. Mr. Hodgson, the president, in opening the proceedings, said that the medical profession in this country was totally unprepared for the emergency which arose six months ago. Many physicians attached to various units engaged in civil practice did not anticipate that they would be called away at a moment's notice and drafted to other parts of the country. In consequence of representations made to the War Office, some of this trouble had now been avoided by a system of exchange. Dr. Norman Walker said that the dislocation of civil practice in the country was still increasing, and if they were to avoid a serious breakdown in the medical service of Scotland, they must realize the situation. Something like one-sixth of the medical profession was already serving—nearly 7,000 out of a total of 37,000—and more were required. Where were the additional physicians to come from? He hoped no licensing body, from a sort of morbid patriotism, would admit to the profession insufficiently trained students. The student's business was to work hard, and the teacher's to give more care to his teaching than ever. The work in Flanders, and later in Germany, would be very hard, and the men who were preparing for it should train as if for an international football match. As for the older men, their places were in the home defense army. The country districts were crying out for physicians. Those who had not been too long retired from practice should take down their armor, polish it up and gird it on again.

FOOD WASTE IN ARMY CAMPS

It is universally admitted that no British army, or indeed any army, has been so well fed as is ours to-day. Unfortunately this implies a certain excess of food, and therefore, waste. In the camps at home the waste of food has caused an outcry in the press. In some cases a large quantity of perfectly good bread has been used for manure. The authorities are endeavoring to remedy the evil, and an order has been issued stating that waste of bread is becoming a serious matter and calls for constant supervision of the commanding offi-

cers. It does not appear to be fully understood that if the army ration provides more bread than necessary, flour for cooking purposes can be drawn in lieu of bread.

"WATER-BITE" IN THE TRENCHES

Soldiers standing for many hours in the trenches with their legs immersed in cold water have suffered in considerable numbers from what was at first termed frost-bite but later was distinguished from that condition, and termed "water-bite." The lesions differ considerably from those produced by exposure to severe cold, to which the term frost-bite is properly applied. In frost-bite the parts commonly affected are those to which the atmosphere has direct access, such as the tip of the nose, the lobe of the ear or the hand. In water-bite, on the other hand, lowness of the air temperature seems to be one of several factors and is never so intense as in frost-bite. Tightness of the boots and putties constricting the leg and interfering with the circulation appears to be an important factor. This tightness may be brought about by swelling of the stocking because of absorption of water. In milder cases there is little to see; the patient complains generally of anesthesia in the toes and ball of the foot, combined with hyperesthesia of the arch and sides of the foot. In more severe cases the feet are swollen, red and blistered, and the patient's temperature rises to 102 and 103 F. There may be edema of the legs and subcutaneous hemorrhages on the toes. In more advanced cases the skin becomes broken. In rare cases gangrene occurred, but the affected parts are swollen and dark instead of shrunken and dead white as in frost-bite. Taken as a whole, water-bite very much resembles bad chilblains. As a means of prevention, the soldiers are instructed before going into the trenches to rub their boots well inside and out with whale oil, to wash and dry their legs and then rub in whale oil or any animal grease they may prefer. They are also directed to avoid tight boots or constricting the legs in any way.

The Lowest Birth Rate on Record

In the quarterly return just published by the registrar general, it is stated that the birth rate in the last quarter of the past year was 22.2 annually per thousand of the population, which was 2.4 per thousand below the mean birth rate in the ten preceding fourth quarters, and 0.6 per thousand below the rate in the corresponding period of 1913. The deaths for the fourth quarter of 1914 numbered 130,882, being 0.6 per thousand below the mean rate in the ten preceding fourth quarters, but 0.7 above the rate recorded in the corresponding period of 1913. Infantile mortality was equal to 105 per thousand, or 17 per thousand below the average in the ten preceding fourth quarters. The revised estimates of the population of England and Wales show that 878,822 births and 516,778 deaths were registered in 1914. The natural increase of population by excess of births over deaths was therefore 362,044, the average annual increase in the preceding five years having been 385,153. The number of persons married during the year was 588,174. The marriage rate in 1914 was 15.9 persons per thousand of the population, an increase of 0.6 per thousand on the average in the ten years 1904-1913. The birth rate in 1914 was 23.8 per thousand of the population, being 0.3 per thousand below the rate in 1913, and lower than the rate in any other year on record. Compared with the average in the ten years 1904-1913, the birth rate in 1914 showed a decrease of 2.1 per thousand. The death rate in 1914 was 14.0 per thousand, which was 0.2 per thousand above the rate in 1913; compared with the average rate in the ten years 1904-1913, the death rate in 1914 showed a decrease of 0.7 per thousand.

Death of a Victim of Leprosy Research

Sir George Turner, M.B., M.R.C.S., died at Colyton, Devon, at the age of 79. He graduated at Cambridge and took up public health work. He was appointed health officer of Portsmouth and later of Hertfordshire, and Essex, as well as lecturer on hygiene at Guy's Hospital. In 1895 he became health officer of Cape Colony. At that time rinderpest was doing great damage among the cattle, and was being investigated by Koch in order to discover a cure. He was recalled before his work was complete, and Dr. Turner continued it and succeeded in producing a method of prevention by simultaneous inoculation of virus and serum. Within a year, rinderpest was stamped out. On the outbreak of the South African War, he was appointed sanitary adviser to the army, and at its close, health officer to the Transvaal. Though busily occupied, he devoted his spare time to the study of leprosy. On reaching the age limit he retired and returned to England, where he continued the bacteriologic study of leprosy. One day while shaving, he noticed marks on his hand which he recognized as the stamp of the disease—a diagnosis of which was confirmed by specialists—but he continued his bacteriologic researches. The king on his own initiative conferred the honor of knighthood on Dr. Turner after this disaster, and he was described in the *Times* at the time as "another Father Damien."

PARIS LETTER

PARIS, March 11, 1915.

The War

ADVANTAGES OF CONSERVATIVE SURGERY IN THE AMBULANCES AT THE FRONT

At one of the late meetings of the Societé de chirurgie, Dr. E. Marquis communicated the results of sixty-five severe injuries of the limbs in which he attempted conservative treatment employing active surgical measures (debridement, disinfection, drainage and removal of sequestra). The patients were the wounded who could not be removed after the battle of the Marne because they were too severely injured. In the case of thirty-six of these patients for whom amputation was considered, the application of conservative principles permitted the saving of a severely injured limb. Only sixteen extemporaneous amputations were made, and that in extremely severe cases (eight were fatal and eight patients recovered). Among the sixty-five wounded in question, eight died from complicating lesions and five died of their wounds without amputation. Two of these died with tetanus. The three others were so severely injured that they probably would not have supported amputation.

TREATMENT OF FROST BITES OF THE FEET

The regretted Dr. Lucien Jacquet, whose death I noted recently (THE JOURNAL, Jan. 23, 1915, p. 356), had devised under the name of the biochemical method a treatment for frost bites consisting of a sort of gymnastic of the affected member associated with an elevated position. Dr. L. Brocq, physician to the hospitals of Paris, has been able to try this procedure in his service of the hospital Saint-Louis. A board is placed on the bed lengthwise, resting by both ends on the transverse bars of the bedstead. An inclined plane is thus obtained on which are placed the pillows intended to receive the limbs of the patient. The patient thus has his legs and especially the feet much higher than the rest of the body. Every hour, at a signal given by the nurse, the patients with the trunk and the head lying flat on the bed put both hands under one thigh and lift the lower limb vertically so that it forms a right angle with the plane of the bed. Holding it in this position, they make all possible movements of flexion, extension and circumduction with their toes and ankles. At the end of five minutes, at a new signal, the same maneuver is executed with the other limb. After the first twenty-four hours, this treatment produces a genuine relief.

On the other hand, Dr. Leon Bernard, professor agrégé to the Faculté de médecine de Paris and physician to the hospitals, has found it desirable in a case of frost bite at first to surround the limb with compresses soaked in hot physiologic salt solution.

RESEARCHES ON GAS GANGRENE

It is well known that in the present war gaseous gangrene has been frequently observed as a complication of wounds, particularly those produced by the explosion of shells. Dr. Weinberg of the Pasteur Institute of Paris has observed that the *Bacillus perfringens* always occurs among the germs that are found in the wounds invaded by gaseous gangrene. He has concluded from this that this bacillus may be the pathogenic cause of this complication. In fact, the inoculation of animals with a culture of *Bacillus perfringens* was regularly followed by the production of a gaseous phlegmon. Weinberg has undertaken to prepare a vaccine by using a twenty-four-hour culture of *Bacillus perfringens* on glucose bouillon. The bacteria are washed in physiologic salt solution and heated to 60 C. The vaccine as prepared contains from fifteen to twenty million bacteria per cubic centimeter. This vaccine injected daily in a dose of from five to twenty million bacteria was perfectly well borne by the patients, who presented no reaction, local or general.

In order to meet the needs of severe cases on a rapid march, Weinberg has also prepared an antiperfringens serum which he obtains by intravenous injection of a horse, using at first dead cultures and then living bacteria of the kind which he used in preparing the vaccine. This serum used on guinea pigs produced both prophylactic and curative results. In a severe case the patient was injected with 22 c.c. of this serum; the injection was followed by a rapid improvement.

A Monument to Dr. Emile Reymond

The glorious and tragic death of Dr. Emile Reymond, senator from the department of the Loire, will be recalled. He left for the front as pilot of an aeroplane and was killed in the course of an aerial reconnaissance (THE JOURNAL, Nov. 21, 1914, p. 1868). A committee has just been formed under the patronage of the president of the republic to erect a monument for him.

BERLIN LETTER

BERLIN, March 2, 1915.

The War

THE WOUNDED

In Berlin, since the beginning of the war, about 30,000 beds have been at the disposal of the military authorities for the treatment of the sick and wounded. Of these at present a large number are unoccupied. In the western district, our losses, on the whole, have considerably diminished because, in spite of daily battles, the conflicts are of slight extent owing to the stationary nature of the warfare. The relatively small number of wounded remain in the western hospitals and only a few reach Berlin. We receive a larger number from the East, but only a fraction of those wounded in the great battles in that region come hither. A portion are kept in the hospitals of the great Polish cities and another in the hospitals of the eastern provinces. On the whole, it has been shown that the number of severely wounded has decreased when compared with former wars, and that of the slightly wounded has not materially increased. From this it is a necessary conclusion that at present, in a war of long duration, the wounded who have recovered return to the front in greater number than formerly. In the campaign in German Southwest Africa, of the 369 who were wounded by the 88 bullet, 46 per cent. were again ready for field service after a period of treatment of 1.7 months on the average. These wounds affected by no means only the soft parts, but there were among them such as in the beginning seemed very severe, namely, twenty-six of the bones and joints, twelve of the lungs and two of the abdomen. These experiences agree with the reports from the Russo-Japanese War, according to which among 7,631 men wounded with small caliber bullets, of those who were able to return to the front, about 71.19 per cent. had skin and flesh wounds, about 22.44 per cent. wounds of the bones and joints, and 6.44 per cent. of the intestines, blood vessels and nerves. Of the Russians and Japanese, in general, 60 per cent. of the wounded returned again to the front, but of the Germans during the war of 1870-1871, only 17.6 per cent. Probably among those quickly recovering there will be found more who have been wounded by shrapnel bullets, fragments of shells and weapons at close hand (hand grenades) than one would expect at first thought. In order to regulate the arrangements of hospitals, especially the care of the wounded, a number of emeritus surgeons-general have been appointed as inspectors of military hospitals by the medical division of the ministry for war. Their function is to visit the reserve and association hospitals in the home districts, to learn the need of the hospital chiefs, to stimulate improvements, and to superintend the transfer of the sick, especially their dismissal to special institutions when that is necessary.

USEFULNESS OF AMBULANCE DOGS

With reference to the importance of dogs in war, the opinion of experts is still at variance. It will be possible to reach definite conclusions on the basis of this war, in which dogs have been used in the medical service for a longer time and in greater numbers than ever before. In the West there are at least 500 animals employed, and as has been reported, they have been installed in the East for some weeks at the instance of Field Marshal von Hindenburg. Repeated reports of the leaders of these ambulance dogs show how useful these animals have shown themselves in finding the wounded, and indicate that many wounded who had been overlooked by the ambulance corps were sought out by an ambulance dog. Courses for the training of these animals and for their leaders have been established.

DEATH OF PROWAZEK

Typhus fever, which has been introduced among us by the Russian prisoners, has exacted another victim of the medical profession. February 17, von Prowazek, the parasitologist head of a department in the institute for naval and tropical diseases, Hamburg, died at the age of 39. Prowazek was an Austrian by birth. After he had been, for a short time, assistant at the institute for experimental therapy at Frankfort-on-the-Main under Ehrlich and at the zoological institute at the University of Munich under Hertwig, he was called to Berlin at the suggestion of Fritz Schaudinn, who was at that time head of the department for investigation of protozoa in the imperial health office. When Schaudinn accepted the call to the institute for tropical hygiene at Hamburg, Prowazek became his successor in the imperial health office, and after the premature death of the talented Schaudinn, he succeeded him at Hamburg (1907). He was on intimate terms with Schaudinn and not only followed in the happiest way the far-seeing plans of this investigator after his death, but also enriched science with many brilliant independent ideas and observations. The studies on the physiology and biology of the cell and of protozoa in particular, his investigations on variola and vaccine, on trachoma, blennorrhea and other diseases of the eye, and the conception founded thereon of the widely distributed chlamydozoan group as the cause of infections (smallpox, rabies, various eye diseases and tropical diseases) made him an important authority among investigators in the field of modern study of protista. He made many journeys for research, and as a result of his wide knowledge, for instance, with reference to botanic and ethnographic subjects, he left a number of reports of his travels which are of value, not only for his special science but also for ethnography, botany, etc. Also his larger works, "The Handbook of Pathogenic Protozoa," "Physiology of the Protista" and "Die deutschen Marianen" are highly regarded scientifically. Of late years, Prowazek busied himself among other things with the investigation of the causes and methods of transmission of typhus fever. He made numerous journeys in the foreign countries for the study of the disease, and was again entrusted with these investigations by the military authorities when the pest showed itself again in the camp of the imprisoned Russians at Kottbus. He fell a victim to this dangerous disease.

AN EQUIPMENT CAR FOR THE GERMAN CENTRAL COMMITTEE OF THE RED CROSS

Scarcely in any theater of war is the expeditious care of our wounded beset with so great difficulties as in the east. In the first place, there is a lack of suitable rooms with the most necessary sanitary equipments to which the wounded and sick can be brought. As there are only very few and often no railroad communications, the supply of necessary medicines, bandages and foodstuffs is very difficult and must be accomplished by wagon, in the most favorable case, by automobiles. Moreover, the Russian roads are, as is well known, in such a wretched condition that one can get on only very slowly with automobiles. As a result of these difficulties, the field hospitals and bandaging stations occasionally lack the most important articles. In order to relieve this unavoidable nuisance to some extent and to assist the military medical service, the central committee of the Red Cross in the east has arranged a "flying depot" for all medical supplies and foodstuffs. For this purpose, a mixed train car with five third class sections and three second class sections was taken. In the second class sections, all the baggage racks were removed and wooden racks built in. By using the seat benches, six stories were formed in each section with single compartments, thirty altogether, in which all the necessary material could be placed in order. The space under the benches was used for the storing of medicines and wines. Even a smoking room is provided in the servants' quarters. The second class sections were arranged for the reception of the wounded. On account of the danger of fire, a car with electric lighting was selected. While the articles stored in the car just described are of service for emergencies, those placed in a second freight car serve for the supplementing of the supplies. In this way, all of the hospitals can be supplied with the necessary material immediately. The cars are placed at the railroad station nearest to the field hospital, and the goods are taken from there by automobile to the bandage stations and field hospitals, which are situated immediately behind the fighting line.

Association News

THE SAN FRANCISCO SESSION

Revised List of Hotel Headquarters

A revision of the headquarters of the several sections is announced by the Committee on Arrangements for the San Francisco Session. In THE JOURNAL, Feb. 20, 1915, page 680, a preliminary announcement was made, designating the hotels which have been selected for headquarters of certain of the sections. The extended and revised list follows:

General Headquarters	Palace
Practice of Medicine	Palace
Surgery, General and Abdominal	St. Francis
Obstetrics, Gynecology and Abdominal Surgery	St. Francis
Ophthalmology	Fairmont
Laryngology, Otology and Rhinology	Fairmont
Diseases of Children	Cartwright
Pathology and Physiology	Bellevue
Stomatology	Plaza
Nervous and Mental Diseases	Chancellor
Dermatology	Plaza
Preventive Medicine and Public Health	Clift
Genito-Urinary Diseases	Manx
Hospitals	Inside Inn
Orthopedic Surgery	Stewart

A list of hotels available for those who attend the San Francisco meeting was published February 20, advertising page 21. A more complete list will appear in a later issue.

Attention is again called to the suggestion of the subcommittee on hotels urging that reservations be made through this committee. In order that the committee may have the information necessary so that arrangements may be made which may meet the convenience of the visiting Fellows, it is suggested that the coupon at the bottom of the abovementioned list of hotels be used in addressing the subcommittee on hotels.

On page 47 of the advertising section of this issue appears an announcement of the San Francisco Session. Those who contemplate attending the session and who follow the suggestion with which this advertisement closes will be put in touch with the railroads in order that they may be supplied with detailed information which will enable them to determine the route that best suits their convenience in making the journey to and from San Francisco. For general descriptions of the various routes see Association News in previous issues of this volume, pages 457, 527, 604, 924 and 1011.

PERSONALLY CONDUCTED TOURS

A number of requests have been received at this office asking for information concerning personally conducted tours. It will be recalled that an announcement was made in THE JOURNAL, February 6, page 528, of the New York and New England Special which is to be conducted under the management of the McCann tours, 1328 Broadway, New York.

CHICAGO MEDICAL SOCIETY SPECIAL TRAIN

A train is being arranged by the Chicago Medical Society. Dr. R. R. Ferguson, 3923 North Keeler Avenue, Chicago, is chairman of the committee, and the tour is under the management of the Gregory Tours, Lytton Building, Chicago. This party will travel by special train, leaving Chicago, June 17, at 10 p. m., over the Rock Island lines to Colorado Springs; from there, by way of the Denver and Rio Grande and the Western Pacific to San Francisco. The party will leave San Francisco at 8 a. m., June 28, for Los Angeles and San Diego, leaving Los Angeles at 4 p. m. on the evening of June 30, returning by way of Salt Lake City and Denver, and is scheduled to reach Chicago at 7:30 a. m., July 4. Further information concerning this tour can be obtained by addressing either the chairman of the committee, or the Gregory Tours.

Marriages

JACOB T. CRAMER, M.D., Muskegon, Mich., to Miss Clara B. Ruoff of Grand Rapids, Mich., February 23.

WESTERN CASS LOOMIS, M.D., to Miss Myrtle Lillian Windsor, both of Wichita, Kan., March 18.

JOHN PATRICK CHAPMAN, M.D., to Miss Mary Justina Huff, both of Philadelphia, March 19.

THEODORE SAUNTE CROSBY, M.D., to Mrs. Stella Olejnk, both of Wakefield, Mich., March 11.

JOSEPH A. VILLIEN, M.D., Maurice, La., to Miss Maude A. Gaidry of Montegut, La., March 9.

ERNEST WILLIAM FREY, M.D., to Miss Mary Jeannette Disney, both of Baltimore, March 22.

Deaths

Samuel Claggett Chew, M.D. University of Maryland, Baltimore, 1858; LL.D. University of Maryland, 1907; professor of materia medica in his alma mater from 1864 to 1866; professor of medical practice until 1907 and a year later made emeritus professor of medicine; dean of the University of Maryland from 1874 to 1879 and twice president of the Alumni Association; twice president and thrice vice-president of the Medical and Chirurgical Faculty of Maryland; consulting physician to Johns Hopkins Hospital; president of the board of trustees of the Peabody Institute and member of the board of regents of the University of Maryland; died at his home in Roland Park, Baltimore, March 22, from heart disease, after an illness of more than a year, aged 77.

William Hunt Hall, M.D. New York University, New York City, 1858; a member of the Medical Society of the State of New York and New York Academy of Medicine; assistant surgeon of the Thirty-Sixth New York Volunteer Infantry during the Civil War and later medical director of the Grand Army of the Republic; a member and assistant surgeon in the Thirteenth Infantry, N. G. S. N. Y.; for many years a practitioner of Saratoga Springs, N. Y.; died suddenly at his home in Camden, Maine, February 2, from heart disease, aged 76.

Henry Smith Noble, M.D. College of Physicians and Surgeons in the City of New York, 1871; a Fellow of the American Medical Association; a member of the American Medical Psychological Society and New York Neurological Society; for thirty-six years a member of the staff of the State Hospital for the Insane, Middletown, Conn., and for sixteen years its superintendent; one of the best-known alienists of the United States; died at the home of his nephew in Waterbury, Vt., March 16, from diabetes, aged 69.

Robert J. Massey, M.D. Medical College of Georgia, Augusta, 1850; a pioneer practitioner of Atlanta, Ga.; surgeon in the Confederate service throughout the Civil War; who, while on duty in Milledgeville, saved the state library and its valuable records from destruction; for several years surgeon to the Confederate Soldiers' Home, Atlanta; a well-known historical writer, making a specialty of the early history of Georgia; died in a sanatorium in Atlanta, March 18, aged 86.

Austin White Alvord, M.D. University of Michigan, Ann Arbor, 1868; a member of the Michigan State Medical Society and once its president; also president of the Calhoun County (Mich.) Medical Society; a member of the Michigan State Board of Registration in Medicine since 1899; a veteran of the Civil War and for many years a practitioner of Battle Creek, Mich.; surgeon to the Nichols Memorial Hospital, Battle Creek; died in St. Petersburg, Fla., March 23, aged 75.

John Cheves Haskell, M.D. Southern Medical College, Atlanta, Ga., 1897; Medical College of the State of South Carolina, 1912; a member of the South Carolina Medical Association; acting assistant surgeon, U. S. Army at Fort Bliss, Tex., during the Spanish-American War; a specialist on diseases of the eye, ear, nose and throat of Charleston; died in St. Joseph's Hospital, Atlanta, Ga., March 17, aged 42.

George Dickinson Thayer, M.D. New York University, New York City, 1881; formerly a Fellow of the American Medical Association and president of the Dickinson Hospital Medical Club, Northampton, Mass.; for nine years city physi-

cian of Northampton and for thirty-two years county physician of Hampden County; died at his home in Northampton, March 16, from heart disease, aged 57.

John Edward Heise, M.D. Hospital College of Medicine, Louisville, 1898; who soon after graduation became a veterinary surgeon and devoted his entire time and attention to this subject; local veterinary surgeon to the Southern Railroad; for four years a member of the board of county commissioners of Richmond County, S. C.; died at his home in Columbia, S. C., March 12, aged 43.

Michael Coyle Drennan, M.D. University of Pennsylvania, Philadelphia, 1863; medical director and rear admiral, U. S. N. (retired); surgeon in the Navy during the Civil War, and retired with the rank of next higher grade to that held on active list, and on account of incapacity resulting from an incident of service; died at his home in Easton, Pa., March 23, aged 76.

Thomas Emerson Duncan, M.D. Western Pennsylvania Medical College, Pittsburgh, 1897; local surgeon at Wellsville, Ohio, for the Cleveland and Pittsburgh Division of the Pennsylvania System; county physician of Columbiana County, Ohio, and a member of the Wellsville Board of Health; died in that place, March 13, from pneumonia, aged 42.

Clarence Milton Swale, M.D. Rush Medical College, 1895; a Fellow of the American Medical Association and local surgeon of the railways centering in Mason City, Iowa; a well-known surgeon of central Iowa; died at his home in Mason City, March 21, from septicemia, due to an operation wound, aged 43.

Thomas Burnett Norris, M.D. Starling Medical College, Columbus, Ohio, 1859; a member of the Ohio State Medical Association and Columbus Academy of Medicine; for more than thirty-six years a practitioner of Alton, Ohio; died at the home of his daughter in Columbus, Ohio, March 18, aged 87.

Gilbert V. Chamberlain, M.D. Detroit Medical College, 1874; a Fellow of the American Medical Association; in 1892 president of the Michigan State Medical Society; and once a member of the common council of Flint, Mich.; died at his home in Flint, March 18, from pneumonia, aged 65.

Michael Sullivan, M.D. Queen's University, Kingston, Ont., 1858; emeritus professor of surgery in his alma mater; formerly mayor and alderman of Kingston and since 1884 a member of the Upper House of the Dominion Parliament; died at his home in Kingston, January 25, aged 76.

Gustav Fernitz, M.D. Louisville (Ky.) Medical College, 1881; a member of the Illinois State Medical Society; for fifteen years editor of the Louisville *Anzeiger* and for the last thirty years a resident of Chicago; died at his home, March 21, from cerebral hemorrhage, aged 70.

William Breckenridge Smith, M.D. University of Maryland, Baltimore, 1899; a Fellow of the American Medical Association and a practitioner of Hampton, Va.; who sailed for Bristol, England, February 25, as surgeon of the steamer *Victoria*; died in Bristol, March 10, aged 41.

James H. Jaquith, M.D. University Medical College, Kansas City, Mo., 1894; a member of the Kansas Medical Society; local surgeon at Emporia, Kan., for the Missouri, Kansas and Texas Railroad; died in St. Mary's Hospital, Emporia, March 19, from pneumonia, aged 49.

Howard Lowrie Baird, M.D. Pulte Medical College, Cincinnati, 1889; of North Side, Pittsburgh; for several years deputy internal revenue collector at Pittsburgh and later managing director of the United Storage Company; died in Los Angeles, March 12, aged 70.

John Giallard Black, M.D. Medical College of the State of South Carolina, Charleston, 1868; a Confederate veteran; once a senator and twice a member of the house of representatives of South Carolina; died at his home in Blacksburg, S. C., March 14, aged 72.

Abraham W. Porter, M.D. Eclectic Medical Institute, Cincinnati, 1876; for two terms a member of the Indiana State Legislature from Martin County; died at his home in Loogootee, Ind., March 14, from septicemia following a frost-bite, aged 79.

Julius Paul Lauer, M.D. University of Pennsylvania, Philadelphia, 1908; a Fellow of the American Medical Association, and a specialist on diseases of children; died at his home in Philadelphia, March 16, from typhoid fever, aged 39.

Smith Armor, M.D. Homeopathic Medical College of Pennsylvania, Philadelphia, 1851; said to have been the oldest alumnus of that institution and the oldest practitioner of Pennsylvania; died at his home in Columbia, March 14, aged 91.

William Henry Shaw, M.D. University of Michigan, Ann Arbor, 1868; for many years president of the bank at Monroe, Iowa, where he had practiced since his graduation; died at his home in that place, March 14, from pneumonia, aged 74.

Andrew B. Harrison (license, Florida, 1899), formerly agent of the State Board of Health at Monticello, Fla., where he practiced for many years; died at the home of his daughter in Columbia, Ala., March 14, aged 80.

Rezier S. Farr, M.D. Medical College of Virginia, Richmond, 1867; a Confederate veteran, with service for two years under General John S. Mosby; died at his home in Belton, Tex., March 16, aged 75.

Nancy M. Miller, M.D. New York Medical College and Hospital for Women, New York City, 1867; one of the first women to practice in New York; died at her home in New York City, March 17, aged 84.

William Orlando Harland, M.D. Rush Medical College, 1877; for many years a practitioner of Mahomet and Mansfield, Ill.; died at his home in the latter city, March 16, from angina pectoris, aged 58.

Greensbury W. Freeny, M.D. University of Maryland, Baltimore, 1862; for many years a member of the Board of Education of Pittsville, Md.; died at his home in that city, March 15, aged 78.

A. Judson Berry, M.D. Missouri Medical College, St. Louis, 1882; formerly city physician of Warrensburg and Johnson County, Mo.; died at his home in Warrensburg, March 11, aged 62.

Smith W. Bellinger, M.D. University of Nebraska, Omaha, 1904; a member of the Iowa State Medical Society; died at his home in Council Bluffs, Ia., March 15, from nephritis, aged 37.

L. Morse Able, M.D. Medical College of Georgia, Augusta, 1890; a practitioner and druggist of St. Matthews, S. C.; died suddenly at that place, February 27, from myocarditis, aged 45.

William F. Betcher, M.D. Milwaukee Medical College, 1902; formerly of Marathon, Wis.; died at the home of his mother in Rochester, Minn., March 11, from pulmonary hemorrhage, aged 40.

Oliver G. Getty, M.D. University of Maryland, Baltimore, 1878; until 1893 a practitioner of Grantsville, Md.; died at his home in Meyersdale, Pa., March 14, from cerebral hemorrhage, aged 59.

Peter Augustus Johnson, M.D. Long Island College Hospital, Brooklyn, 1882; a member of the Medical Society of the State of New York; died at his home in that city, February 24.

Peter Nilsson, M.D. Eclectic Medical College of the City of New York, 1898; lecturer in gross pathology in his alma mater; died at his home in New York City, March 21, aged 46.

Fernando Charles Putnam Newman, M.D. Long Island College Hospital, Brooklyn, 1895; of Brooklyn; died in St. John's Hospital in that city, March 3, from rheumatism, aged 44.

Cyrus B. Merchant, M.D. Tulane University, New Orleans, 1886; formerly a member of the State Medical Association of Texas; died at his home in Quinlan, Tex., Dec. 29, 1914.

George H. Chappell (license, years of practice, Michigan, 1900), for many years a practitioner of Grand Rapids, Mich.; died at his home in that city, March 11, from pneumonia, aged 73.

Burnett V. Buffington, M.D. Eclectic Medical Institute, Cincinnati, 1873; for fifty-two years a practitioner of Ohio; died at his home in Marysville, March 11, from cystitis, aged 75.

Macpherson Smith, M.D. Albany (N. Y.) Medical College, 1855; who many years ago gave up practice for business in New York City; died at his home in Albany, January 25, aged 82.

John C. Mueller, M.D. St. Louis College of Physicians and Surgeons, 1889; Sioux City (Iowa) College of Medicine, 1900; died at his home in Lamotte, Iowa, March 11, aged 48.

Frank Arthur Searle, M.D. Albany (N. Y.) Medical College, 1914; an intern in the Albany Hospital; died in that institution, January 20, from malignant endocarditis, aged 24.

Thomas L. Keys, M.D. University of Louisville, 1885; formerly a Fellow of the American Medical Association; died at his home in Rockwall, Tex., January 11, aged 58.

William Michael Cavano, M.D. Northwestern University Medical School, Chicago, 1900; died at his home in San Francisco, about February 11, from myocarditis, aged 48.

James P. Thompson, M.D. Leonard Medical School, Raleigh, N. C.,; a colored practitioner of Elberton, Ga.; was shot and killed in his office in Elberton, February 19.

Joseph Teel Farrar, M.D. California Eclectic Medical College, Los Angeles, 1891; of Berkeley, Cal.; died in the Roosevelt Hospital in that city, March 8, aged 64.

Harvey Scott Pitman, M.D. University of Louisville, 1873; of East Bernstadt, Ky.; a Fellow of the American Medical Association; died January 25, aged 69.

F. G. Bright, M.D. Kentucky School of Medicine, Louisville, 1868; of Commerce, Mo.; died in a hotel in Evansville, Ind., March 22, from heart disease, aged 74.

Thomas Jax Cole, M.D. Eclectic Medical Institute, Cincinnati, 1875; died at his home in Van Wert, Ohio, Nov. 30, 1914, from cerebral hemorrhage, aged 60.

William C. Crooks, M.D. University of Pennsylvania, Philadelphia, 1866; died at his home in Philadelphia, March 14, from cerebral hemorrhage, aged 75.

George H. Littlefield, M.D. University of Vermont, Burlington, 1881; died at his home in Glenfield, N. Y., March 18, from valvular heart disease, aged 62.

Jesse Jacob Foote, M.D. New York University, New York City, 1894; died at his home in Potsdam, N. Y., March 22, from cerebral hemorrhage, aged 48.

Horace M. Julian, M.D. University of Maryland, Baltimore, 1885; died at his home in St. Louis, January 30, from cerebral hemorrhage, aged 53.

Brice M. Hughes, M.D. Jefferson Medical College, 1868; a retired practitioner of Milan, Tenn.; died at his home in that city, January 2, aged 81.

James Anderson (license, years of practice, Illinois, 1878), died at his home near Louisville, Ill., about February 27, from heart disease, aged 89.

Charles Osborne Tupper, M.D. Jefferson Medical College, 1886; died at his home in Brooklyn, February 22, from influenza, aged 53.

A. Presley (license, Texas, 1907), for thirty-five years a practitioner of Texas; died at his home in Yoakum, February 28, aged 64.

John Littell Tarlton, M.D. Tulane University, New Orleans, 1908; of Lydia, La.; died in New Orleans, March 18, aged 28.

Frank W. Flower, M.D. Hahnemann Medical College, Chicago, 1876; died at his home in Carthage, Mo., March 7, aged 77.

Finzalam M. Perras (license, Ontario, 1880), died at his home in Gracefield, Que., Dec. 17, 1914, from senile debility, aged 77.

James W. Wells, M.D. Western Reserve University, Cleveland, 1872; died at his home in Cushing, Okla., January 28, aged 74.

E. L. Tillinghast, M.D. Tulane University, New Orleans, 1861; died at his home in Mooringsport, La., February 23, aged 75.

Joseph A. Weaver, M.D. Atlanta (Ga.) Medical College, 1891; died at his home in Buena Vista, Ga., March 5, aged 47.

H. T. Garnet, M.D. University of Louisville, Ky., 1862; died at his home in Keytesville, Mo., February 16, aged 75.

Abram De Graff, M.D. Albany (N. Y.) Medical College, 1858; died at his home in Guilderland, N. Y., January 1.

Henry W. Thomas, M.D. Atlanta (Ga.) Medical College, 1893; died at his home in Macon, Ga., March 6, aged 47.

Albert Erasmus Schulz, M.D. University of Toronto, Ont., 1904; died at his home in Elmira, Ont., Dec. 23, 1914.

DeWitt C. Collins (license, Mississippi, 1882), died at his home in Pleasant Hill, Miss., March 14, aged 84.

J. J. Lemon (license, Mississippi), died at his home in Biloxi, Miss., recently, aged 90.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

PEACOCK'S BROMIDES AND CHIONIA

Reports of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following reports on Peacock's Bromides and Chionia, sold by the Peacock Chemical Company, St. Louis.

W. A. PUCKNER, Secretary.

PEACOCK'S BROMIDES

This is another nostrum of the ordinary mixture type. Of the various statements concerning composition furnished by the company, the following gives as much information as any:

"In Peacock's Bromides it is designed to unite fifteen grains of the purest bromides of Potassium, Sodium, Ammonium, Calcium and Lithium, in such proportion as to insure the bromine equivalent of potassium bromide. Each fluid drachm about equals, in medicinal strength, fifteen grains of potassium bromide."

The label on the trade package indicates the presence of 10 per cent. of alcohol. It will be observed that the proportions of the different bromids are not stated. Hence, the assertion of the Peacock Chemical Company that "there is nothing secret in this compound" cannot be true. A physician prescribing it cannot know how much of each ingredient he is giving; it may be 14½ grains of potassium bromid and ⅛ grain each of sodium, ammonium, calcium and lithium bromids, or any other of an enormous number of possible permutations of the proportions.

While the theoretical basis of bromid medication is not yet fully settled, the weight of the best pharmacologic authority and clinical experience is decidedly against the dogmatic claim of the Peacock Chemical Company that "the best result is obtained by prescribing a combination of bromides." And if there were any advantage in prescribing such a combination, the physician ought to regulate the proportions.

The following quotations are from the advertising matter:

"Being uniform in purity and therapeutic power, it can be relied upon to produce clinical results which it is believed cannot be obtained from the use of commercial bromide substitutes."

"The purity, quality and constant uniformity of this high grade product have long made it a standard bromide preparation."

These claims are unfounded. The analyses published in the concern's own advertising "literature" show a variation of 8 per cent., in the bromid content, which certainly indicates a sufficient lack of uniformity.

Again quoting:

"In order to insure the best results the bromides must be pure, i. e., free from alkalies and almost free from chlorides. The U. S. P. allows three per cent. of chlorides. Peacock's Bromides contains the least possible amount of this impurity. Bromism is therefore less frequent in those cases in which this preparation is employed."

In view of the claim of low chlorid content, it is interesting to note that the analyses above referred to show that the chlorid content is actually higher than that of some other bromid preparations on the market.

The claim of merit on the ground of freedom from chlorids is, of course, absurd, and must be regarded as an attempt to play upon the credulity of the doctor. As a matter of fact, the average individual takes with his food many times the amount of chlorid he could possibly take in contaminated bromid. The 10 per cent. of alcohol would undoubtedly have a greater disturbing influence on the bromid action than the amount of chlorid that might be present in any bromid on the market.

Then we have the statement that, owing to this freedom from chlorids:

"Bromism is therefore less in those cases in which the preparation is employed."

Sodium chlorid, even as an impurity, would retard rather than favor the development of bromism; sodium chlorid is even used as an antidote in bromid poisoning.

The therapeutic claims lay stress on the value of the bromids in sleeplessness, epilepsy, sexual excitement, tetanus, infantile convulsions, chorea, delirium tremens, the climacteric, migraine, headache due to pelvic conditions, ovarian neuralgia, etc. These and other claims, while too vague to be branded as falsehoods, are misleading and not in accordance with modern teaching or practice; the latter recognize the limitations of bromid therapy as well as its scope and advantages. For instance, in epilepsy:

"Large doses must be given if we expect to control the convulsions. We are to be guided by the frequency and the severity of the seizures, the saturation of the system by bromides and by the age of the patient. The rule is 'large doses for long periods but with occasional periodic monthly or quarterly omissions.' When we have succeeded in controlling the convulsions in so far as greatly diminishing the frequency and severity of the attacks we may then attempt to decrease the dose, but the results must be carefully watched. Increase in frequency of convulsive seizures is a sign that the bromides must again be pushed as before."

The best modern clinical teaching concerning the treatment of epilepsy is that bromids should be avoided except as a last resort. Bromids do not cure, and the amount necessary to control the convulsions may produce a degree of mental hebetude that is a greater evil than the disease itself.

It is recommended that the preparation be held ineligible for admission to N. N. R., because of its conflict with Rules 1, 4, 6 and 10 of the Council, and that this report be published.

CHIONIA

Chionia, according to the statement of the Peacock Chemical Company, which exploits the product, contains 19 per cent. alcohol and is "A Preparation of Chionanthus Virginica."[1]

This preparation is advertised particularly as "a potent hepatic stimulant" and special claims are made for it in various disturbances of the liver:

"Chionia is very well adapted in the treatment of hepatic congestion owing to its specific action in depleting the portal circulation."

In passive congestion of the liver, the manufacturers would have us believe

". . . we have a drug in Chionia that will stimulate the circulation of the blood and lymphatics of the liver as well as stimulate its physiological activities and instead of the patient vomiting the blood an internal depletion of the liver occurs."

". . . in cases of simple jaundice due to circulatory (congestive) changes in the liver, Chionia is the drug 'par excellence' that will rapidly cause a disappearance of this symptom."

As a prophylactic against eclampsia, if a history of torpidity of the liver is obtained:

"CHIONIA should be used during the major portion of child-bearing period because it acts directly on the liver stimulating its functional activity."

Chionanthus virginica has never been shown to have the slightest pharmacologic activity and no evidence is presented that its offspring, Chionia, has any therapeutic value whatever in any disturbance of the liver. The promoters themselves indicate a lack of faith in their own preparation, for they advise the use of old and efficient forms of treatment along with Chionia—heart tonics and laxatives in passive congestion of the liver, mercurial purge or podophyllin and sodium phosphate in "biliousness," and quinin in malaria. Finally, with delightful English and elaborate insouciance, they advise in the treatment of eclampsia:

"In all cases the uterus should be emptied as quick as possible. (Version of Cæsarian Section.)"

The physician who prescribes Chionia promotes a fraud. The Council held Chionia ineligible for admission to N. N. R.

1. Of Chionanthus Virginica or fringe-tree, the Council on Pharmacy and Chemistry in its 1912 report on "Some Unimportant Drugs" said: "The drug is much used by eclectics and homeopathists, especially as a depurant in hepatic and syphilitic disorders . . . The claims for this remedy are not supported by experimental evidence and clinical reports of its use fail to show indications of discriminating critical observation. It is not noticed by most pharmacologic authorities."

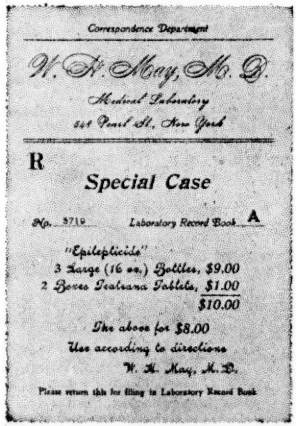
[EDITORIAL COMMENT: In Peacock's Bromides and Chionia the Peacock Chemical Company has, for a third of a century, been foisting on the medical profession nostrums composed of drugs that are easily combined in any proportion that the physician may want to prescribe. The company has been inflicting on the unthinking physician pseudoscientific rubbish in the form of advertising literature that should long ago have been regarded as an insult to the intelligence of the medical profession. The following medical journals are carrying advertisements of Peacock's Bromides and Chionia:

Alienist and Neurologist
American Journal of Surgery
American Medicine
Archives of Pediatrics
Atlanta Journal-Record of Medicine
Buffalo Medical Journal
Charlotte Medical Journal
Chicago Medical Recorder
Denver Medical Times and Utah Medical Journal
Eclectic Medical Journal
Ellingwood's Therapeutist
Indianapolis Medical Journal
International Journal of Surgery
Lancet-Clinic
Louisville Monthly Journal of Medicine and Surgery
Maryland Medical Journal
Medical Brief
Medical Fortnightly
Medical Herald
Medical Record
Medical Review of Reviews
Medical Sentinel
Medical Standard
Medical Summary
Medical Times
Medical World
Nashville Journal of Medicine and Surgery
New Orleans Medical and Surgical Journal
New York Medical Journal
Pacific Medical Journal
Southern Practitioner
Texas Medical Journal
Texas Medical News
Therapeutic Gazette
Wisconsin Medical Recorder
Woman's Medical Journal]

DR. MAY'S FORMULA

Another Fraudulent Epilepsy Cure

W. H. May, M.D., and his so-called "medical laboratory," both of New York City, conduct a mail-order "cure" for epilepsy. The nostrum, now called "Dr. May's Formula" was, a year or so ago, "Dr. May's Epilepticide, The Wonderful Nerve Restorer." Nor is the change in the wording of


Correspondence Department

W. H. May, M. D.

Medical Laboratory

348 Pearl St., New York

R

Special Case

No. 9719 Laboratory Record Book A

"Epilepticide"

3 Large (16 oz.) Bottles, $9.00

2 Boxes Sedrara Tablets, $1.00

$10.00

The above for $8.00

Use according to directions

W. H. May, M.D.

Please return this for filing in Laboratory Record Book

Photographic reproduction (reduced) of a slip sent out by W. H. May to prospective victims of his mail-order epilepsy cure giving the impression that each case gets individual attention.

the label the only indication that the May concern has recognized the futility—not to say dangers—of a mendacity that expresses itself in cold type. A study of the booklets issued a year or two ago with those published later shows various changes, deletions and modifications that are of interest to

the student of the history of quackery. Moreover, it makes for optimism; it encourages the belief that the public is developing a healthy skepticism of the claims of the quack. For instance:

In 1912: "It *has been proven* that Dr. W. H. May's Scientific Discovery Epilepticide, The Great Nerve Restorer is the Most Successful Remedy for Epilepsy." [Italics ours.—Ed.]

In 1914: "It has *often been said* that Dr. May's Formula is the Most Successful *Remedy* for Epilepsy." [Italics ours.—Ed.]

In 1915: "It *is said* that The Dr. May Formula is The Proper and Most Successful *Treatment* for Epilepsy *or Fits*." [Italics ours.—Ed.]

Reproductions of the older and later forms of the May nostrum.

In the older booklet May takes to himself the credit for discovering the cause of epilepsy. Thus:

"It has been proved by the researches of Dr. May that Epilepsy or 'Fits' is directly caused by the presence of a growth, a rupture of a small bloodvessel or an adhesion in the brain proper or between its membranes.

"Previous to this discovery the causes of this malady were unknown."

And in another pamphlet:

"Time and space will not permit of a lengthy description of the elaborate experiments and investigations which have been carried on in the Dr. May Medical Laboratories by which these facts were obtained. Suffice it to say that all modern authorities have accepted Dr. May's theory, and that the results following his discovery have been of far more reaching importance than those obtained by Koch or Pasteur."

These astonishing falsehoods are not to be found in the latest May "literature." One may be pardoned for assuming that their absence is due less to an awakened conscience than to a healthy dread of that efficient but overworked arm of the Federal service—the Postoffice fraud-order department.

SCARING THE VICTIMS

"It is not our purpose to worry the unfortunate victims of this dreadful disease," soliloquizes May in his opening paragraphs, "nor shall we seek to terrorize them with harrowing details which beset their path unless they have the right treatment." Far be it from the considerate "Dr." May to frighten those who seek relief from epilepsy via the mail-order route. Yet it is conceivable that the following paragraphs, quoted from the same source, might have at least a slightly disquieting effect on the sufferer:

"The mother falls on the red-hot stove while preparing the daily meal, the child falls into the fire while playing about the hearthstone.

"The father, while returning from work, falls in the crowded street and his life is crushed out by the cruel car or the rushing automobile. These are but a few instances of violent deaths met by epileptics in New York City during one week."

And then this is hardly reassuring:

"If you Hesitate, you are Lost! Often Delay means, if not death, a Condition Worse than death — the Maniac's Doom."

The price of the May nostrum is not a fixed quantity. The amount first asked, and that given on the label, is $3 a bottle. Should an order not be forthcoming May comes down to $5 for three bottles and offers to throw in for good measure two boxes of his tablets. This five-dollar combination is asserted to be "sufficient to relieve and permanently cure almost any case of Epilepsy." If this inducement fails to coax the money from the victim the offer comes to send "Two large full-size Sixteen-Ounce Bottles" for a mere $3; still later comes the opportunity to purchase "1 large 16-ounce bottle" for $2.

Having "discovered" the real cause of epilepsy, May naturally decided that "the old method of treating Epilepsy" should be discarded. To take its place " a *new scientific treatment* of the disease has been perfected by which have been obtained the most wonderful and marvelous cures." What is this marvel? Let the chemists of the American Medical Association's Laboratory answer:

CHEMISTS' REPORT[1]

One original bottle of "Dr. May's Formula," manufactured by Dr. W. H. May Medical Laboratory, New York, N. Y., was submitted to the Chemical Laboratory for examination. The bottle contained a brown liquid, having extractive matter present. The specific gravity of the liquid at 15.6 C. was 1.2347. Qualitative tests demonstrated the presence of alcohol, ammonia, potassium, sodium, bromid, chlorid and sucrose. Quantitative determinations yielded the following:

Alcohol (by volume)	4.50 per cent.
Ammonia (NH_3) (by weight)	0.62 per cent.
Potassium (K^+) (by weight)	0.05 per cent.
Sodium (Na^+) (by weight)	2.89 per cent.
Bromid (Br^-) (by weight)	13.29 per cent.
Chlorid (Cl^-) (by weight)	0.03 per cent.
Sugar (by weight)	1.15 per cent.

Essentially each 100 c.c. of the solution contains 4.5 grams of ammonium bromid and 16.0 grams of sodium bromid. Calculating from the bromid determination, each daily dose, one teaspoonful (1 fluidram), contains the equivalent of 15 grains of potassium bromid, and each daily dose (4 teaspoonfuls) corresponds to 60 grains of potassium bromid.

Says May of his nostrum:

"It is not poisonous; contains no narcotics — no morphin, opium, cocaine or belladonna such as are ordinarily used in other remedies for Epilepsy, and are so destructive to health."

What are the facts: It *is* poisonous; it *does* contain a narcotic; it *is* essentially just such a mixture as is ordinarily sold as an "epilepsy cure" and it *is* destructive of health.

Some typical advertisements of the May "epilepsy cure." The concern confines its advertising largely to rural districts.

In short, the May epilepsy "cure" is foisted on sufferers under claims that are either directly or inferentially misleading and fraudulent and when purchased the victim has obtained what is essentially a bromid mixture having all the dangers—and limitations—of such a mixture. No wonder "patent medicine" fakers are opposed to the declaration of their formulas! It would sound the death knell of their business.

1. This is a condensed report of the chemists' findings. The details of analysis will appear in the Reports of the Chemical Laboratory of the American Medical Association for 1915.

Correspondence

Conditions at the University of Utah

To the Editor:—The affairs of the University of Utah are at present in a sad state, and for the information and protection of professional men who might receive offers of positions here, especially in the sciences and in the medical school, we desire to present a brief statement of the facts in the case.

A few weeks ago four members of the faculty who had served the institution for from two to ten years each were notified by the president that their services would be dispensed with at the close of the year. This announcement came from a clear sky with no previous trouble; in fact, some of these men had but recently been led to believe that their services were satisfactory. The only reason each could obtain was "the good of the university." Two demotions of professors, one of them a man who has served as head of the English department for twenty-three years, followed immediately.

Naturally the men concerned pressed the president for reasons, and various excuses, not reasons, were offered. These "reasons," moreover, shifted from day to day, as the demands became more urgent from the men and from their colleagues who saw injustice being done them arbitrarily. Finally the agitation became public and reached such a stage that alumni, students, faculty and other organizations petitioned the board of regents to investigate the matter carefully. The excuses offered were in part at least based on mere rumors, which the president has not taken the trouble to investigate. The board promised the public an investigation, but when they met on the evening of March 17 it was only to issue a long statement defending and "whitewashing" the president. They did not investigate or go into the matter in any way other than to accept the president's statement in toto. Fourteen men, including two deans and six other heads of departments, including Professors Ebaugh, Vorhies, Byrnes, Mattill and Sharp of the medical school, promptly resigned. Later it was learned and made public that the statement issued by the board was prepared in a star-chamber session the Sunday before.

This is but the culmination of a policy of distrust and repression exercised by the president and regents for some time, but especially noticeable in the past year or so. We believe that the existence of the university as a free public institution is at stake. No desire for cooperation with the faculty exists in the governing board; their whole attitude toward the faculty is that of a contractor toward his laborers. We cannot bow to that system without losing our self-respect. We desire that those who propose to come here as successors to any one of us shall have knowledge of conditions in advance and come with their eyes open.

CHARLES T. VORHIES, PH.D.,
H. A. MATTILL, PH.D.,
ROBERT G. SHARP,
R. L. BYRNES, M.D.,
University of Utah, Salt Lake City.

[The University of Utah gives the work of the first two years of the medical course, for which two years of regular university work, including courses in physics, chemistry and biology are required for admission. The medical work given, therefore, is intimately related to the university proper and the medical teachers are a part of the regular university faculty. It appears that nearly all of the medical faculty have resigned: W. C. Ebaugh, professor of chemistry; C. T. Vorhies, professor of zoology and botany; Ralph L. Byrnes, professor of bacteriology and pathology; Henry Albright Mattill, professor of physiology and physiological chemistry, and R. G. Sharp, assistant professor of anatomy. These resignations indicate that most of the work in the medical department has ceased, which is a serious matter for the medical students enrolled. The standing of these teachers in the educational world is too high to allow the situation to pass without due explanation.—ED.]

Rehabilitation and Segregation in Tuberculosis

To the Editor:—In your editorial references to the tuberculosis survey of five Minnesota counties made by me for the State Board of Health (THE JOURNAL, March 6, 1915, p. 833), I feel that I must criticize the wording of your conclusions as unintentionally misleading.

You say, "In view of the increasing evidence that both the predisposing causes and the successful treatment of tuberculosis are inseparably bound up with the problems of the home, it is to be hoped that at least a part of the sustained interest in the subject be directed toward a rehabilitation of tuberculous families rather than ill-advised segregation of individual members."

While all students of the tuberculosis problem must agree that rehabilitation of tuberculous families is the necessary and ultimate goal of endeavor in tuberculosis control, it seems that every practical worker along this line must see that segregation (*not* "ill-advised") is the one absolutely essential preliminary step toward this goal.

Rehabilitation is so much more of a problem than segregation and is so hopeless of accomplishment without preliminary segregation that it would seem well to defer active discussion of it until segregation is fairly well under way.

The adverse inference that may be drawn from your expression "ill-advised segregation" is liable to prove embarrassing to those working for helpful legislation along this line.

Further in regard to rehabilitation: In the rural districts the enforcement of comprehensive sanitary measures or housing control comparable to what may be carried out in cities is not feasible under existing conditions. The rural population is less open to suggestion along such lines and is more adverse to reception of material help than the civic population, among whom the tendency to pauperization must be avoided.

Education of the rising generation in the rural districts in matters of disease prevention, preferably through the public educational system, will lead more easily and rapidly to self-rehabilitation than will any direct efforts otherwise applied by the state.

Segregation, aside from being the only practical means of relieving the most urgent and immediate danger of infection, is a valuable educational measure, especially in the rural districts. Segregation opens the way for popular study of disease prevention and helps vastly in getting sanatorium treatment applied to the early cases of tuberculosis.

H. G. LAMPSON, M.D., Minneapolis.

Epidemiologist, Division of Preventable Diseases, Minnesota State Board of Health.

Experiences with Varicella and Variola

To the Editor:—I was much interested in the article on varicella and variola ("Prevention is Greater than Cure," Therapeutics, THE JOURNAL, March 13, 1915, p. 907). I wish to add my experience with these two diseases, as they are constantly present on the Mexican border, and my opportunities for study have been with 1,200 cases of the superficial and 160 cases of the deep eruption. The Vienna school is quoted as claiming that they are identical. There is too much stress laid on the location of the eruptions and the appearance of the patient in eruption.

I find that varicella frequently shows in the scalp, palms, soles, tongue and buccal cavity. I have never seen it in the pharynx.

Erysipelas sometimes is a serious complication, and there is even mild delirium in adults during a part of the days of eruption. The temperature is seldom above 103 F.

Varicella is as frequent in adults as children if never previously exposed. Variola is a pestilential disease, no milder to-day than before Jenner, absolutely controlled by recent vaccination. Error in diagnosis is the only basis on which anti-vaccinationists can offer argument. In Arizona only thirteen deaths have been reported in three years from smallpox, yet

50 per cent. of our appropriations in health departments has been spent for smallpox quarantine (much of which was varicella).

The smallpox pustule is reticulated, begins beneath the third layer of the skin and destroys the overlying layers, causing an admixture of blood in the crust and a black color in the scab, which on detachment leaves a permanent cicatrix.

The varicella crust molds the underlying skin, and when it drops off, leaves slight elevations which soon disappear; also occasional chickenpox pits quite distinguishable from the post-smallpox facies.

I make histologic distinction the chief diagnostic point and have never found cause to regret my position. There is no such disease as mild smallpox, in my experience, and the superficial pustular eruption never runs into smallpox.

I have seen epidemics of the two diseases occur simultaneously, but always traced the source of Jenner smallpox to a case of Jenner variola with a regular death rate and sequelae. I take the positive position as health officer that the paralysis of business in a community following the report of an epidemic of smallpox is so great that a burden of responsibility is placed on an officer to make a differential diagnosis, and not allow himself to be stampeded by the hysteria which follows a reckless announcement of a pestilential disease from an inexperienced or ultracareful practitioner.

GEORGE D. TROUTMAN, M.D., Tucson, Ariz.
Superintendent of Health, Pima County.

Diagnosis of Chickenpox and Smallpox

To the Editor:—I was much pleased with the kind words concerning my paper on diagnosis of chickenpox and smallpox quoted in "Prevention is Greater than Cure" (Therapeutics, THE JOURNAL, March 13, 1915, p. 907). I note, however, an error in the fourth paragraph of the first column on page 908, fourteenth line, in that it states that the margins of the lesions are not crenated in either disease, thus furnishing no diagnostic point in this particular direction.

The fact is that the lesions of chickenpox *are* crenated, while those of smallpox are not, hence affording one differential point.

H. W. HILL, M.D., St. Paul.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

INQUIRIES ON THE HARRISON ANTINARCOTIC ACT

SOME CRITICISMS ON THE COMMISSIONER'S RULINGS

To the Editor:—What right has the Commissioner of Internal Revenue to differentiate between a specialist and a country doctor? If a country doctor uses one-half grain cocain in taking a foreign substance out of an eye, he must take the name and address of the patient and the date and the amount used, and a specialist doing the same work has nothing to do but keep his stock bottle.

A "dope fiend" comes to me who can use several grains a day, and it takes several grains to give any relief. What is to limit my discretionary power in the amount to be given as the law is now construed? How often is it legitimate to prescribe said drugs? If a doctor has complied with the law and writes his prescription in accordance with said law, where is the druggist to step in and refuse to fill said prescription on the ground that the patient is getting more than the law allows?

If I give a baby "Papine" and that baby has not yet been named, how am I to comply with the law?

Is the construction of "personal attendance" in accord with common sense? "If I go to the sea and wade out in the water and drown I am to blame, but if I sit down on the beach and the sea comes up to me and I am drowned I am to blame *not*."

What percentage of drug fiends use the "dope" in the eye, ear, urethra, vagina, per rectum? "Much ado about nothing."

Why were the licenses limited to $1 per year and the blanks $10 per thousand?

Why delegate to one man—Commissioner of Internal Revenue—power to read into a law so many ideas that are not contained within the law as passed by the legislative body after a study of two years? The law as passed and the law as construed are to me not the same. He has no right to construe that my business address is my name in full—it is common sense, but does his construction make it legitimate in the eyes of the law?

I prescribe:

℞ Tr. opii ..... 4 drams
Olii sinapis ..... 5 drops
Lin. camphorae ..... q. s. ad. 8 ounces

M. Sig.: External use twice a day.

Will this prescription pass muster? Or must it be written in accordance with the Harrison law? I could take some of it internally.

The law was badly needed and we all want to comply with it and will comply with it, of course; but there are some features of it that need a different construction.

Why let the "patent medicine" houses go on using the small amount of dope that creates the desire and then create so much storm after the fire has been kindled?

J. W. MATLOCK, M.D., Frost, Texas.

WANTS A PLAIN, COMMON-SENSE LAW

To the Editor:—Your explanation in THE JOURNAL, March 20, 1915, p. 1002, seems to make the Harrison law the work of an imbecile. From it I gather that we can give paregoric in unlimited quantities because it has less than 2 grains of opium to the ounce, and yet we cannot prescribe paregoric tablets, that represent 10 drops of paregoric to the tablet, or brown mixture tablets, that represent 1/25 grain of opium to each tablet, because an ounce of them would contain more than 2 grains of opium. For sheer imbecility, can that be beaten anywhere in the world? Yet this law contains a section that is even more foolish and troublesome. A physician must actually be *absent* from his office before he can come under exception, Section 2, and specialists are allowed to do many things the general practitioner cannot do.

These are only a few things in the law; but if you can find any two physicians or any two lawyers that will interpret this law alike, I think you will have to search the entire country to find them. All real physicians wish to stamp out the drug evil, and in common fairness they are entitled to a plain, common-sense law (instead of this jumble) for a guide.

E. C. HELM, M.D., Beloit, Wis.

REGARDS THE LAW AS USURPATION

To the Editor:—I have been surprised to observe that among so many inquiries about the new Harrison law there have been but few adverse criticisms, although it is justifiable to make adverse criticism.

1. The law is a usurpation by Congress of the police power of the states. The right of Congress to impose a revenue tax on any article is admitted, but in the case of narcotics the Congress assumes authority to regulate use, distribution and sale. If it is competent for the Congress to regulate the sale and distribution of one drug or one group of drugs, why not of another, and why not of all? If these premises be admitted, it is not apparent why the Congress may not assume the enactment of general medical practice laws, and complete the federal usurpation of state authority.

2. The necessary blanks for ordering supplies of the listed drugs are furnished by a government monopoly at an exorbitant price. Any job printer is glad to furnish similar printed stationery for $3.50 per thousand or less, while the government price is at the rate of $10 per thousand.

3. A statutory offense is arbitrarily and unjustly elevated into a felony, and technical violations of the law, consisting of acts not in their nature criminal, are treated as major crimes.

In case of criminal use of narcotic poisons, or intent to use—if such use or intent to use be proved—the laws of the several states furnish the needful machinery of justice, and it is their prerogative to deal with such offenders.

4. The most serious of the defects of the Harrison law is in the excessive penalties provided for in violation of its rules.

To denounce savage and extreme penalties against mere statutory offenses is a species of cruel tyranny worthy of the dark ages, but a disgrace to our boasted twentieth century enlightenment.

"O, it is excellent
To have a giant's strength, but it is tyrannous
To use it like a giant."

W. K. MCCOY, M.D., Gum Spring, Va.

COMMENT.—The preceding letters are criticisms either of the law or its administration rather than requests for specific information. They can therefore be answered only in general. They illustrate the difficulties attending the administration of a law, no matter how carefully considered the law itself may be. Laws can contain only general principles. They cannot provide detailed specifications suitable for every situation. The application of the general principles of the law to the specific instance must be entrusted to an executive officer. In the case of the Harrison law, this is the Commissioner of Internal Revenue who, through his subordinates, administers this law just as he does the other revenue laws. In the making of the rulings and regulations, the general intent of the law must always be kept in mind. The object of the Harrison law is to provide a system of records by which all drug preparations containing opium or cocain can be traced from the importer to the consumer. In order to make such a system complete, the physician is required to

make a record of such drugs supplied to patients. To compel a record of each individual case in which a few drops of cocain solution are used, especially when this is repeated many times each day in the office practice of a specialist, is, of course, out of the question. On the other hand, to permit the unrecorded use of cocain solutions is equally impossible. The line must be drawn somewhere. For the present, the commissioner has ruled that specialists using such solutions as a routine procedure must keep a record only of the amount of stock solutions made up, while physicians using such solutions occasionally and at long intervals must keep a record. Whether this is the fairest solution possible or whether it will be the ultimate ruling remains to be seen.

There are no restrictions at present on the right of the physician to prescribe or dispense as he may see fit. The druggist is forbidden to fill a prescription if he has reason to believe that it is given for the purpose of evading the law or if it is fraudulently obtained. The ruling regarding personal attendance is another effort on the part of the executive officers to interpret the law. The presence of the exemption clause is an evidence of the power of patent medicine business rather than of the consistency of the law makers.

LANDAU COLOR TEST FOR SYPHILIS

To the Editor:—I should like to make further inquiries on the Landau tests on points which are not clear to me from your discussion of this test (Queries and Minor Notes, THE JOURNAL, Feb. 20, 1915, p. 686).

1. The specific gravity of carbon tetrachlorid is 1.63. I had the solution made up, namely, 29.3 grains iodin crystals to 4 fluidounces carbon tetrachlorid. Is that correct? If not, please state what is the correct formula.

2. THE JOURNAL says, "To 0.2 c.c. of the clear serum add 0.01 c.c. of the reagent consisting of a 1 per cent. solution of iodin in a solution of carbon tetrachlorid." Would it not be all right to use a multiple of these amounts, say ten times as much of the serum or 2 c.c., and ten times as much of the reagent or 0.1 c.c.? If not, how measure out 0.01 c.c. or 16/100 drop? I know we could dilute sixteen times and then take 1 minim, but would that be correct and would we dilute with the carbon tetrachlorid?

3. Is the test made with the paraffin oil and tincture of iodin as reliable?

JOHN G. SCIFRES, M.D., Indianapolis.

ANSWER.—1. In making up the reagent for use in the Landau test one must, of course, take into consideration the specific gravity of the carbon tetrachlorid. The specific gravity of this menstruum is 1.63 at 0 C., and 1.593 at 20 C. The latter is more nearly the ordinary laboratory temperature so that we should regard the specific gravity of 1.593 as the better one to use in the computation. On this basis we would prepare a 1 per cent. solution of iodin in carbon tetrachlorid by dissolving 1 gram of the former in 62.77 c.c. of the latter. This would approximate the figure of 29.3 grains of iodin in 4 fluidounces of carbon tetrachlorid.

2. In measuring the reagent and the serum for use in the test, it is, of course, permissible to employ multiples of the figures mentioned. That is, instead of using 0.2 c.c. of serum and 0.01 c.c. of reagent, one may measure out ten, twenty or other times the amounts of these fluids. If one wishes to follow the original technic, 0.01 c.c. is measured by means of a 1 c.c. pipet which is graduated in 1/100 c.c. These may be obtained from any of the chemical supply houses.

3. Regarding the reliability of the original method, using paraffin oil and tincture of iodin as the reagent, as compared with the later modification it is to be said that the results are apparently just as reliable. However, more time must elapse before the result may be read, if one uses the older technic.

ARTIFICIAL RESPIRATION AND THE PULMOTOR—RESTORATION OF POLYMERIZED FORMALDEHYD

To the Editor:—1. Apart from the question of oxygen supply, has the Draegerwerk pulmotor any real advantages over efficient manual artificial respiration? In mine gas poisoning cases wherein a physician is not immediately available, do you consider the use of the pulmotor or the Schäfer method of artificial respiration in the subject's best interest?

2. Can formaldehyd which has been polymerized be restored to its former state by any simple means?

McK.

ANSWER.—1. In mine gas poisoning cases the Schäfer method of artificial respiration is to be preferred to the use of the pulmotor. The pulmotor has been investigated by a committee appointed by the Council on Health and Public Instruction of the American Medical Association at the request of the Bureau of Mines of the Department of the Interior, and was not approved. This question has been discussed in THE JOURNAL editorially (Resuscitation from Mine Gases, Sept. 26, 1914, p. 1117). The article by S. J. Meltzer (THE JOURNAL, May 10, 1913, p. 1407), may also be referred to.

2. When the polymerized form of formaldehyd known as paraformaldehyd is vaporized in the presence of water, it is largely converted again into gaseous formaldehyd.

USE OF DOREMUS-HINDS UREOMETER

To the Editor:—In making up the reagents for use in the Doremus-Hinds ureometer, I have been struck by the wide divergence in the strength of the sodium-hydroxid solution recommended by different authorities. Faught, in the 1912 edition of "Essentials of Laboratory Diagnosis," advises adding one part of the bromin solution to fifteen or twenty parts of 1:25 (4 per cent.) solution of sodium hydroxid. Emerson, in his 1906 edition of "Clinical Diagnosis," advises adding one part of the same bromin solution to one part of a solution of sodium hydroxid made by dissolving 100 gm. of sodium hydroxid in 250 c.c. of water (40 per cent.). Such wide variation in formulas intended for the same quantitative chemical reaction seems to call for some explanation. I have used the Emerson formula for some years with apparently accurate results, but should prefer the weaker sodium hydroxid solution for several reasons if the same results are attained. May I ask the opinion of your laboratory experts in the matter?

LOWELL C. FROST, M.D., Los Angeles.

ANSWER.—The foregoing method for the determination of urea is not entitled to serious consideration from the scientific point of view, although it has some clinical value in the sense that daily variations may be reasonably well studied by its use. Much divergence of opinion has arisen, in times past, regarding the strength of the solution to be used as the reagent, owing to the various attempts to prevent the loss of nitrogen as well as the coestimation of other nitrogenous constituents than urea. It has been established that the higher the concentration of the hypobromite and, especially, the higher the concentration of the sodium hydroxid solution, the less the loss of nitrogen. For this reason it is advisable to use the stronger concentrations of sodium hydroxid in making up the reagent.

Further, it is unnecessary in this determination to have sodium or potassium bromid added to the bromin solution before the latter is mixed with the sodium hydroxid, because the sodium bromid is formed in the reaction between bromin and sodium hydroxid and, especially, because the sodium bromid has nothing to do with the decomposition of the hypobromite by the urea. In other words, all that is necessary in this reagent is the addition of pure bromin to the cold concentrated sodium hydroxid solution. In using this method proceed as follows: Keep on hand a 20 per cent. stock solution of sodium hydroxid. When ready to prepare the reagent, which should be done for every few determinations, add 1 c.c. of pure bromin to 40 c.c. of the 20 per cent. sodium hydroxid solution. Fill the ureometer with this mixture and proceed with the estimation in the usual way. The reason for giving these quantities is that the instrument holds approximately this amount of fluid, and thus one will have only fresh hypobromite solution for his determinations. A strong alkaline solution is necessary to absorb the carbon dioxid evolved in the reaction, the volume of which would otherwise be added to the nitrogen. One ureometer full of this solution will answer perfectly for the estimation of the urea in from six to eight specimens of urine, depending of course on the amount of urea in the specimens.

BRICKLAYER RHEUMATISM

To the Editor:—I am frequently called on to examine and treat bricklayers, and I am impressed with the number of times that I find a peculiar myalgia to which I have given the name "bricklayer rheumatism." The condition occurs usually in left hand and arm below the elbow, and causes intense rheumatic pains with very little swelling. The condition is very persistent and does not respond to salicylates. It differs from rheumatism in that it never involves other than the original site of the trouble. The reason the left arm is involved is that this is the arm which handles the brick, and consequently has the heavier work to perform. A peculiar thing about it is that when a workman handles heavy brick for a time and is then put to handling lighter brick, the trouble invariably follows. I believe that the workman who gets used to the heavier brick and then handles lighter brick unconsciously picks up the lighter brick with the same effort that he uses to pick up the heavier brick, and the consequent jerk strains the muscle.

So far I have had fairly good success with rest and hot saline applications. I should like to hear from someone else on this condition.

W. J. THORNTON, M.D., Cleveland.

ANSWER.—We have been unable to find any literature on this subject. Perhaps some of our readers have made similar observations.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARIZONA: Phoenix, April 6-7. Sec., Dr. John Wix Thomas, Phoenix.
ARKANSAS: Regular, Little Rock, May 11-12. Sec., Dr. W. S. Stewart, Citizens Bank Bldg., Pine Bluff. Homeopathic: Little Rock, May 11. Sec., Dr. Scott C. Runnels, 900 Scott St., Little Rock. Eclectic: Little Rock, May 13. Sec., Dr. C. E. Laws, 712 Garrison Ave., Fort Smith.
CALIFORNIA: San Francisco, April 13-16. Sec., Dr. Charles B. Pinkham, State Capitol, Sacramento.
COLORADO: Denver, April 6. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.
DISTRICT OF COLUMBIA: Washington, April 13-15. Sec., Dr. George C. Ober, 125 B St., S. E.
IDAHO: Lewiston, April 6. Sec., Dr. John F. Schmershall, Jerome.
ILLINOIS: Chicago, May 13-15. Sec., Dr. C. St. Clair Drake, Springfield, Ill.
LOUISIANA: Homeopathic, New Orleans, May 3. Pres., Dr. C. R. Mayer, 919 St. Charles St., New Orleans.
MINNESOTA: Minneapolis, April 6-8. Sec., Dr. Thomas S. McDavitt, Lowry Bldg., St. Paul.
MONTANA: Helena, April 5. Sec., Dr. William C. Riddell, Helena.
NEVADA: Carson City, May 3. Sec., Dr. S. L. Lee, Carson City.
TENNESSEE: Knoxville, Memphis and Nashville, May 3. Sec., Dr. A. B. DeLoach, 426 Scimitar Bldg., Memphis.
UTAH: Salt Lake City, April 5-6. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.
WEST VIRGINIA: Charleston, April 13. Sec., Dr. S. L. Jepson, 81 12th St., Wheeling.

District of Columbia October Report

Dr. George C. Ober, secretary of the Board of Medical Supervisors of the District of Columbia, reports the oral and written examination held at Washington, Oct. 13-15, 1914. The total number of subjects examined in was 8; total number of questions asked, 80; percentage required to pass, 75. The total number of candidates examined was 13, of whom 8 passed and 5 failed. The following colleges were represented:

PASSED College	Year Grad.	Per Cent.
Georgetown University	(1914)	89.1
George Washington University	(1912) 84.5; (1914)	88.7
Howard University	(1914)	83.2
Hahnemann Medical Coll. and Hosp., Chicago	(1914)	79.1
Jefferson Medical College	(1914)	82.3
University of Vermont	(1914)	77
University of Virginia	(1909)	85.3
FAILED		
Howard University	(1914)	72, 72.5, 73.4
Leonard Medical College	(1913)	66.1
Meharry Medical College	(1914)	74

Kansas October Report

Dr. H. A. Dykes, secretary of the Kansas State Board of Medical Registration and Examination, reports the written examination held at Topeka, Oct. 13, 1914. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 6, of whom 3 passed and 3 failed. One candidate was granted a reregistration license. The following colleges were represented:

PASSED College	Year Grad.	Per Cent.
Howard University	(1914)	82
Northwestern University	(1914)	83
University of Iowa, College of Medicine	(1884)	75
FAILED		
Eclectic Medical University, Kansas City	(1914)	*†
Meharry Medical College	(1914)	*

* No grade given.

South Carolina November Report

Dr. A. Earle Boozer, secretary of the State Board of Medical Examiners of South Carolina, reports the oral and written examination held at Columbia, Nov. 10-12, 1914. The total number of subjects examined in was 13; total number of questions asked, 105; percentage required to pass, 75. The total number of candidates examined was 36, of whom 20 passed, including 1 osteopath, and 16 failed. The following colleges were represented:

PASSED College	Year Grad.	Per Cent.
George Washington University	(1913)	85.1
Atlanta Medical College	(1914)	75.7, 79.1
University of Georgia	(1912)	75
University of Louisville	(1914)	76.1
College of Phys. and Surgs., Boston	(1914)	78.2
Leonard Medical College	(1914)	78.2
University of Pennsylvania	(1911) 89.9; (1914)	84.1
Medical College of State of S. C.	(1913) 75, 75.4; (1914)	75.6, 77.5
Meharry Medical College	(1913)	75.5, 78.6
University of West Tennessee	(1914)	75, 75, 76.5, 77.7
FAILED		
Atlanta College of Phys. and Surgs.	(1912)	66.5
Atlanta Medical College	(1914)	61.5
Georgia College of Eclectic Med. and Surg.	(1912)	63.4
Southern College of Med. and Surg.	(1913) 66.7; (1914)	49.1, 69.2
Maryland Medical College	(1905)	*
University of the City of N. Y.	(1882)	64.5
North Carolina Medical College	(1903)	67.9
Medical College of the State of S. C.	(1900) 65; (1911)	66
Meharry Medical College	(1911)*; (1914)	74.1
University of West Tennessee	(1910)*; (1913)	58.9
Gate City Medical College	(1909)	70.1

* No grade given.

Florida December Report

Dr. E. W. Warren, secretary of the Regular Board of Medical Examiners of Florida, reports the written examination held at Palatka, Dec. 2-3, 1914. The total number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 75. The total number of candidates examined was 55, of whom 36 passed and 16 failed. Three candidates were granted licenses on years of practice allowances. The following colleges were represented:

PASSED College	Year Grad.	Per Cent.
University of Colorado	(1913)	86.6
Yale Medical School	(1885) 88.8; (1900)	81
Atlanta College of P. and S.	(1905) 85; (1911)	75, 87.8
Atlanta Medical College	(1914)	79.4
Atlanta School of Medicine	(1907) 77.8; (1909)	84.6
University of Georgia	(1914)	79.1
Bennett Medical College	(1914)	81
Chicago College of Medicine and Surgery	(1914)	77.7, 90.1
Rush Medical College	(1899) 92; (1914)	89.3
Indiana Medical College	(1907)	75.6
Tulane University of Louisiana	(1912)	89.7, 94.6
Medical School of Maine	(1889)	78.8
College of P. and S., Baltimore	(1911)	61.7
Johns Hopkins University	(1912)	91
University of Maryland	(1914)	87.8, 92
Harvard University	(1914)	89
Missouri Medical College	(1877)	83.1
Leonard Medical School	(1911)	75
Medical College of Ohio	(1904)	75
Woman's Medical College of Pa.	(1899)	91
Medical College of the State of S. C.	(1912)	91
Meharry Medical College	(1912) 81.8; (1913)	76
Memphis Hospital Medical College	(1903)	84
University of the South	(1906)	75
Medical College of Virginia	(1914)	91
University College of Med., Richmond	(1912)	84
Marquette University	(1913)	85.1
FAILED		
Atlanta Medical College	(1890)	65
Atlanta School of Medicine	(1909)	58.8
Southern College of Med. and Surg.	(1913)	50.1
Central College of Phys. and Surgs.	(1898)	63.6
Kentucky School of Medicine	(1881) 48.7; (1896)	57.1
College of Phys. and Surgs., Boston	(1912) 61.6; (1913)	64.3
College of Physicians and Surgs. in the City of N. Y.	(1881)	49.3*
Meharry Medical College	(1914)	58
Memphis Hospital Medical College	(1913)	67
Lincoln Memorial University	(1913)	67
University of Tennessee	(1912) 55.3; (1914)	57
Vanderbilt University	(1894)	45.6
University of Paris	(1900)	†

* Official information from this college states that this candidate is not a graduate.
† No grade given.

Indiana January Report

Dr. W. T. Gott, secretary of the Indiana Board of Medical Registration and Examination, reports the written examination held at Indianapolis, Jan. 12-14, 1915. The total number of subjects examined in was 16; total number of questions asked, 100; percentage required to pass, 75. The total num-

ber of candidates examined was 14, including 3 osteopaths, all of whom passed. Two candidates were given reregistration licenses. Fifteen candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Chicago College of Med. and Surg.		(1913)	78.1
Rush Medical College		(1914)	92.8
Indiana University		(1914)	81.5
Medical College of Indiana		(1896)	90.2.
Kentucky School of Medicine		(1891)	75
University of Louisville		(1913) 82.2, 86.4; (1914)	78.2
Johns Hopkins University		(1912)	90.3
Missouri Medical College		(1881)	75
University of Maryland		(1910)	83.9

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Chicago College of Med. and Surg.	(1910) Kentucky;	(1913)	Illinois
Coll. of Phys. and Surgs., Chicago.	(1893) Maryland;	(1906)	Illinois
Illinois Medical College		(1906)	Illinois
Northwestern University		(1905)	Illinois
Rush Medical College		(1912)	Illinois
Louisville Medical College		(1896)	Kentucky
University of Maryland		(1889)	Maryland
University of Michigan, Dept. of Med. and Surg.		(1912)	Illinois
Washington University		(1907)	Illinois
Ohio-Miami Medical College		(1912)	Ohio
Jefferson Medical College		(1908)	Illinois
Meharry Medical College		(1910)	Tennessee
University of Nashville		(1904)	Tennessee

Minnesota January Report

Dr. Thomas S. McDavitt, secretary of the Minnesota State Board of Medical Examiners, reports the oral, practical and written examination held at Minneapolis, Jan. 5-7, 1915. The total number of subjects examined in was 18; total number of questions asked, 80; percentage required to pass, 75. The total number of candidates examined was 5, of whom 2 passed and 3 failed. Fifteen candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Rush Medical College		(1911)	88
Hahnemann Med. Coll. and Hosp., Phila.		(1911)	88
	FAILED		
Indiana Medical College		(1906)	*
Hamline University		(1904) 67.9; (1907)	*

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
George Washington University		(1908)	Iowa
College of P. and S., Chicago	(1902) Iowa;	(1909)	Illinois
Hahnemann Med. Coll. and Hosp., Chicago		(1913)	Illinois
Northwestern Univ.	(1903) South Dakota; (1908)	(1910)	Illinois
Rush Medical College	(1906)	(1913)	Illinois
Drake University		(1909)	Iowa
University of Louisville		(1910)	Wyoming
Woman's Medical College of Baltimore		(1892)	S. Dakota
St. Louis University		(1912)	Missouri
University of Virginia		(1909)	Virginia
Marquette University		(1913)	Wisconsin

* No grade given.

Utah January Report

Dr. G. F. Harding, secretary of the Utah State Board of Medical Examiners, reports the written examination held at Salt Lake City, Jan. 4-5, 1915. The total number of subjects examined in was 19; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 8, all of whom passed. Two candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Denver College of Medicine		(1884)	75
Gross Medical College		(1895)	75
Rush Medical College		(1914)	83.6
John A. Creighton Medical College		(1914)	84.8
Ohio Medical University		(1898)	75
Medico-Chirurgical College of Philadelphia		(1913)	88.6
Meharry Medical College		(1914)	75
Royal University of Naples		(1897)	75

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
College of Phys. and Surgs., Chicago		(1904)	Illinois
Ensworth Medical College		(1905)	Nevada

Book Notices

PHYSIOLOGICAL PRINCIPLES IN TREATMENT. By W. Langdon Brown, M.A., M.D., F.R.C.P., Assistant Physician to St. Bartholomew's Hospital. Third Edition. Cloth. Price, $2.25 net. Pp. 408. New York: William Wood & Co., 1914.

The recent advances in physiology have affected medical treatment in two ways: In the first place, they have been the occasion of introducing a number of new remedies, chiefly enzymes and the organ extracts which are supposed to owe their efficiency to the action of hormones. Second, physiology has given us a clearer idea of many functions so that we have a more rational conception of diseases and consequently are able to introduce a treatment founded on correct principles. Brown's work is an attempt to illustrate the value of these principles in the treatment of a number of diseases.

In the first chapter the hormones, including iodothyrin, adrenine and pituitary extract are considered together with the action of ovary, testes and thymus, kidney and muscle. The value of these remedies in various directions is stated with due conservatism, and a very commendable feature of the book is a careful summary following each principal subject. The objectionable features of epinephrin therapy are clearly stated. His estimate of the action of pituitary extract (the author uses the proprietary term, pituitrin) appears to underrate rather than overestimate the value of the drug. Speaking of its action on postpartum deficiency of uterine tone, he says, "It is doubtful whether it is superior to ergot in this capacity, however, while before delivery its use is subject to the same limitations as that drug."

Chapter 2 deals with the rational treatment of gastric disorders, and it is an excellent example of the application of modern physiologic facts to the treatment of diseases of the stomach. However, while the author can find no rational explanation for the use of alkalies in the treatment of dyspepsia, he still continues the principle of giving alkalies with bitters such as nux vomica before meals and hydrochloric acid after meals. He states that the use of these remedies is described as giving more satisfactory results than either separately. Probably this is an example of the influence of current usage over the most scientific mind. He is quite pessimistic with reference to the value of rectal feeding. Chapter 3 deals with the mechanical factors in digestion and indigestion. Here we have naturally a somewhat full discussion of intestinal stasis and also visceroptosis. In Chapter 4, the work of the pancreas is described and the theory of the influence of secretin is explained with a statement that no action can be expected from it when given by the mouth. One of the most interesting chapters of the book is that on uric acid and the purin bodies in which the various fallacies with reference to the action of uric acid are clearly set forth. The chapter, though comparatively short, will well repay a careful reading.

In treating of phosphaturia, the author makes it quite evident that this condition is a symptom and not a disease, being largely dependent on the alkaline reaction of the urine. The author has the courage to attack the popular practice of estimating urea as a guide to the renal capacity. He notes the fact that physicians finding a low urea output (due to deficient ingestion of protein) conclude that the renal capacity is deficient and that nitrogenous food must be still further restricted and consequently lessen the nitrogen intake with the appalling result of a greater deficiency of urea. The following paragraph is worth quoting:

"What the physician expects to learn from the urea estimation without reference to the amount of nitrogen in the food is hard to say. If he knew the total nitrogen excreted, as estimated by Kjeldahl's method, he could see whether the body was converting a due proportion of the nitrogen into urea; this would give him some information as to the capacity of the individual, but urea estimations by themselves tell him practically nothing. This fallacy vitiates many of the conclusions arrived at by so careful an observer as the late Professor Foxwell (*Lancet*, London, 1908, ii, 1425). He hardly mentions the diet factor at all. In one case he certainly says that he found a patient with chronic nephritis passing

as much as 585 grains (39 grams) of urea a day. On inquiry, he learned that the patient, feeling run down, was taking six meals a day, three of them being good meat meals. This shows that a chronic nephritic can excrete even more than a healthy man does on his ordinary diet, though it presumably taxes his kidneys more. We can agree with Professor Foxwell that a daily output of 250 grains of urea is the lowest on which a man can permanently exist without losing ground; for this would represent a daily intake of about 50 grams of protein, which is little enough to satisfy even the most extreme 'nitrogen economist.' In short, the amount of urea excreted by the kidney depends on the amount of protein eaten, and, within wide limits, on little else."

Chapter 9 gives a very good explanation of the exposition of the relations of acidosis. In other chapters the subjects of intestinal intoxications, irregular action of the heart, vasomotor disease, cyanosis and lastly vitamins are treated in the same excellent way. We are glad to say that the book is not marred to any extent by the introduction of proprietary remedies. Cyllin, izal and soluro are the chief ones mentioned.

KURZES LEHRBUCH DER KINDERKRANKHEITEN. Als Zweite Auflage von Nil Filatow's Gleichnamigem Werke Gänzlich Neu Bearbeitet von Dr. Heinrich Lehndorff, gew. Assistent des Karolinen-Kinderspitales. Paper. Price, 5.60 marks. Pp. 228. Vienna: Josef Safar, 1914.

The author announces that he does not pretend to give more than the essentials of each subject and the major details of symptomatology and therapeutics of childhood. The chapter on infant feeding follows closely the work of Czerny and Finkelstein. The chapters on infective diseases are excellent, showing the work of Filatow, the author of the first edition. For the purpose for which this book is written it can be highly recommended.

DIE NEUEREN ARZNEIMITTEL UND DIE PHARMAKOLOGISCHEN GRUNDLAGEN IHRER ANWENDUNG IN DER AERZTLICHEN PRAXIS. Von Dr. A. Skutetzky, Privatdozent für Innere Medizin, und Dr. E. Starkenstein, Privatdozent für Pharmakologie und Pharmakognosie. Second edition. Cloth. Price 7 marks. Pp. 475. Berlin: Julius Springer, 1914.

While the title of this book indicates that it deals with new remedies, it discusses many older preparations also. When old as well as new remedies are discussed, the reasons for the introduction of a new or improved preparation are given. The remedies are grouped according to their therapeutic uses, under the following heads: heart and circulation; blood and blood-producing organs; hemostasis; digestive disorders; genito-urinary diseases; respiratory diseases; skin diseases; eye diseases; metabolism disorders; artificial foods; organotherapy; anesthesia; analgesia; antisepsis; infectious diseases, and poisonings. Under each heading are found discussions regarding the pharmacologic action (supported by clinical evidence) and uses of several preparations. Modern therapeutics are based largely on pharmacology, and the evidence for a large part of the statements is pharmacologic. Besides the actions and uses, the composition, the dosage and the form in which the drug appears on the market, the price and the manufacturer are given as far as possible.

SQUIRE'S POCKET COMPANION TO THE BRITISH PHARMACOPEIA. Comparing the Strength of Its Various Preparations with Those of the United States, French and German Pharmacopeias, to Which Are Added Not Official Preparations and Practical Hints on Prescribing and Dispensing. By Peter Wyatt Squire. Second Edition. Leather. Price, 10 shillings 6 pence net. Pp. 1040. London: J. & A. Churchill, 1915.

This book is the British physician's pocket manual of the British Pharmacopeia. The larger part of the book is devoted to a consideration of drugs, including all the pharmacopeial preparations, with the medicinal properties and doses, each of which is compared with those of the Continental pharmacopeias and of the United States Pharmacopeia, along with many non-official preparations. The book contains a large amount of general information such as tables for the conversion of different degrees of temperature, for the conversion of weights and measures, suggestions for prescribing, etc. While the book is specially adapted to the needs of those who use the British Pharmacopeia, American physicians will find in it much that is valuable.

Miscellany

The Correct Attitude Toward Epidemic Diseases

The Marquette (Mich.) *Journal*, in commending the Houghton (Mich.) *Gazette* for its vigorous campaign to prevent the spread of small-pox in the northern peninsula by the thorough vaccination of the people, says that fighting the enemy before he reaches the city gates is an excellent principle on which to act. Michigan, which the *Journal* calls a "small-pox state," has had some experience with small-pox epidemics in unvaccinated communities in which attempts were made to suppress the news on the (usual) ground that it would "hurt business." The *Journal* points out the foolishness of this plan of procedure and gives facts emphasizing again the effectiveness of vaccination. The *Journal* says:

"Undoubtedly the *Gazette* has had to go through the usual experience of newspapers when they start in to use the powerful weapon of publicity. Small-pox in a community is dreaded by the merchant and business man. To give it publicity means that trade is kept away. The first impulse of a community usually is to cry 'keep it out of the papers.' But to suppress the facts; to let people dwell in ignorance, has always resulted in disaster and this has been strikingly demonstrated in Michigan many times, and epidemics have gained full sway because of the carelessness, born of ignorance, while full sized doses of publicity would have put every person on guard.

"Saginaw was one of the latest towns to have this experience. The fact that a virulent form of small-pox had broken out was suppressed and the disease spread rapidly. When about twenty-five cases appeared, and deaths resulted, the newspapers broke loose from the influence that had kept them quiet and they raised a row that galvanized city and state authorities into a campaign that resulted in wiping out the disease. But not before two-score deaths had occurred. And most of the exposures had been made *during the period when the news was suppressed*. The mortality in that epidemic was about 50 per cent., but *not one vaccinated person died*. Bay City had a similar epidemic the year before, with a mortality of about 45 per cent., but not a death of a vaccinated person. In neither epidemic, which were the severest in many years, *was a vaccinated person even seriously ill*.

"Copper country people may not appreciate it, but those who have had experience with small-pox in Michigan—which is a 'small-pox state'—know that the *Gazette's* course, seconded by other newspapers of the community, is the surest and quickest way of stamping out the disease."

Brisket Disease Among Cattle

Glover and Newsom in Bulletin 204 of the Colorado Agricultural College describe brisket disease, an unusual affection of cattle found so far only in Colorado. After an investigation of the trouble they summarize their findings as follows: A disease occurring in cattle in the high altitudes of Colorado, the principal symptoms of which are swelling of the brisket and of the loose tissues under the jaw, usually diarrhea and a moist cough with gradual emaciation and death. It is chronic in character but is fatal in practically all cases. On necropsy the most marked features are generally dropsy, enlarged and hard liver and dilated heart. In six cases shipped to a lower altitude (about 5,000 feet) all recovered without other treatment, although it seems reasonable to believe that they would have died had they not been shipped. It appears to be caused by an exhaustion of the heart muscle, associated with a varying degree of dilatation and a hypertrophy, and this being brought about by exertion before acclimatization at high altitudes, or in the case of calves, inherited cardiac weakness. Medical treatment has so far proved of little avail, but where possible, shipping the affected animals to a lower altitude is recommended. Preventive measures include the use of bulls that have been raised at altitudes of 8,000 feet or more, with a view to building up a hardier strain of cattle, also the curtailment of indiscriminate shipping of low altitude cattle to high altitudes.

Foot and Mouth Disease

The outbreak of foot and mouth disease among cattle in the United States is of interest to the profession on account of the possibility of its transmission to man. One or two cases have been reported of human infection, though they have not been well authenticated. The chief interest of the disease to the medical profession, however, is the manner in which it affects the milk industry and perhaps results in the infection of the milk itself. The interesting theory has been advanced by veterinarians and others having to do with the cattle and dairy industries that skimmed milk from creameries sent back to the farm for feeding to stock has been the means of transmitting and perpetuating the disease. Sterilization of all by-products of creameries is therefore urged. The *Cornell Veterinarian* for February contains a history of the different outbreaks of the disease in this country, of which the present one, covering eighteen or more states, is the fifth. It also contains other papers on the nature of the disease, its etiology and morbid anatomy, symptomatology, diagnosis and differential diagnosis, its economic significance and methods for control, and what animal owners should do to prevent it, together with a number of illustrations of microscopic and gross specimens of the disease, methods of disposing of the animals, etc. Each of these articles is written by an expert veterinarian or person having special knowledge of the disease, and the pamphlet should be a convenient means of disseminating accurate information concerning this insidious and rapidly spreading infection.

Drugs and Chemicals in Cigarettes

The statement has been frequently made that certain brands of cigarettes and tobaccos contain dangerous or habit-forming drugs. Manufacturers have been accused of buying extensively of tincture of opium for cigarettes and arsenic has been said to be found in the papers. In order to prove or disprove this the Bureau of Drugs of the Ohio Agricultural Commission had an analysis made of the various brands of cigarettes, the tobacco content and the papers being analyzed separately. The work was done by the chemist of the department, Azor Thurston, who in *Bulletin 2* reports his findings. Nicotin was determined by two methods, the silicotungstate, and by Lloyd's reagent. The ash was examined for the alkalinity of water soluble and insoluble ash and likewise for hydrochlorid acid insoluble ash. Opium and other drugs were determined by usual reagents according to Fuller's scheme of analysis. The nicotin content was found to vary between 2.79 and .43 for most of the different brands, some of the cheaper ones having the highest nicotin content, one cheap one showing 3.34 per cent. No opium or other habit-forming drug was found. The papers were all found to be chemically filled, usually with calcium and magnesium oxids or oxids of alumina and silica. A few brands contained small quantities of nitrates, although it is said manufacturers frown on papers containing nitrates. Alfalfa, which it has been reported is sometimes used in fillers for cigarettes, was not found in any of the twenty-eight brands examined.

"Furnace Workers' Cataract"

At the Ophthalmological Section of the Royal Society of Medicine, London, Mr. A. B. Cridland showed a case of "glass workers' cataract" in an iron smelter ("puddler"), an occupation in which the condition has not received much attention. Considering the number of hours of exposure to the glare of molten metal, especially as the men rarely wore protective goggles, he was greatly surprised that there were not more cases. Though cataract is recognized by the government among the occupational diseases for which special compensation must be paid by employers in the case of glass workers, it is not so recognized in the case of iron workers. He suggested as a more inclusive term for such cases "ray cataract." In the discussion which followed, the president, Mr. Priestly Smith, suggested the name "furnace workers' cataract," as furnace work was common to all the occupations mentioned.

Medicolegal

Action for Malpractice Not Maintainable Against Physician for Miscarriage by Woman Taking Abortifacient Independently

(*Coombs et ux. vs. James* (*Wash.*), *144 Pac. R. 536*)

The Supreme Court of Washington reverses a judgment rendered for the plaintiffs, husband and wife, for a miscarriage suffered by the wife, which she attributed to electrical treatment administered to her by the defendant. The reversal is with instructions to dismiss the case. The court says that at the time of her first visit to the defendant Mrs. Coombs was advanced in pregnancy about two months. It was admitted that on this visit the defendant advised that she was not pregnant, but suffering from delayed menstruation, and that a mild application of electricity would restore normal conditions. And Mrs. Coombs admitted that, while this treatment was being administered, she went to a drug store, on April 17, and, first ascertaining that it could be obtained without a physician's prescription, purchased an ounce bottle of extract of cotton root, which she took in certain doses until she had taken it all. The last electrical treatment was administered by the defendant April 23, and on May 7 the miscarriage occurred. While there may have been some dispute as to whether or not the treatment administered by the defendant was sufficient to produce a miscarriage, there was none that the cotton root taken as Mrs. Coombs admitted she took it would produce such a result. As between these two causes, for one of which only the defendant would be responsible, which was the proximate cause of the injury suffered by Mrs. Coombs? To answer would be to guess, since it was impossible for the evidence to give any indication. The evidence as to the first cause was conjectural, and the most that could be said was that it was equally consistent with proper and improper treatment. The evidence as to the second cause was certain and consistent only with one theory, and that was that it would produce an abortion and was taken with that intent. In the face of these facts, the court does not feel that a jury should be permitted to speculate between these two causes. No verdict should be permitted to stand in cases of this character when the jury disregards that which is certain and undisputed in favor of that which is conjectural. Nor is it permitted to speculate as between two acts the effect of which cannot be determined by any human agency, as to which is the proximate cause of the given happening. The law will not permit a woman to take an abortive medicine, and then, when the natural result follows, to maintain an action on the speculation that her injury was not produced by herself, but was the result of some treatment administered by her physician. The case is not like those in which, as between disputed facts, a jury may determine the cause of an injury. Judgment should have been entered in the defendant's favor.

Action in Regard to Filing Certificate Must Be Included

(*State vs. Stanley* (*Wash.*), *144 Pac. R. 689*)

The Supreme Court of Washington affirms a judgment dismissing the action against the defendant on the ground that the facts stated in the information did not constitute a crime. The Washington statute provides that "Every person filing for record, or attempting to file for record, the certificate issued to another, falsely claiming himself to be the person named in such certificate, or falsely claiming himself to be the person entitled to the same, shall be guilty of a felony, and, on conviction thereof, shall be subject to such penalties as are provided by the laws of this state for the crime of forgery." The information in this case did not charge the defendant with filing for record, or attempting to file for record, a certificate issued to another, falsely claiming himself to be the person named therein, or falsely claiming to be the person entitled to the same, but charged him merely with falsely claiming himself to be the person named in

such a certificate, and falsely claiming to be the person entitled to the same, omitting the element of filing for record, or attempting to file for record. It was on this ground that the trial judge held the information insufficient. He held that the act of filing for record, or attempting to file for record, the certificate, was a necessary ingredient of the offense defined by this section of the statute, and that the information in order to state a crime thereunder must so charge. The supreme court is constrained to adopt the construction of the trial judge. It thinks the act of filing for record, or attempting to file for record, a necessary ingredient of the offense. In other words, it is an offense, within the meaning of the statute, for any person to file for record, or attempt to file for record, the certificate issued to another, falsely claiming himself to be the person named in the certificate, or to file for record, or attempt to file for record, the certificate issued to another, falsely claiming himself to be the person entitled to the same; but to make the false claims, without filing or attempting to file the certificate for record, does not constitute the felony described in this section of the statute. This construction is borne out by that other section which provides that "It shall be the duty of every holder of a license from the state board of medical examiners to exhibit his or her license to any resident of this state who may request to see the same, and any person refusing or failing so to do, or who shall exhibit any such license as his or her own, in response to such request, when such license has not been issued to him or her, shall be guilty of a misdemeanor." Clearly to exhibit a certificate to another as one's own is falsely claiming to be the person named therein, and falsely claiming to be the person entitled to the same, and it is not to be supposed that the legislature would in one section of an act declare a specific false claim to be a misdemeanor, and in another section of the same act declare a similar false claim to be a felony.

Conviction Affirmed Where Defense was Epileptic Insanity

(*People vs. Harris (Cal.), 145 Pac. R. 520*)

The Supreme Court of California affirms a conviction of murder in the first degree in this case, in which the defense was insanity, or rather a form of epileptic insanity. It was not claimed that the defendant was insane at the time of the trial, but only that he was insane when he committed the homicide. He testified that for some three years previous to the homicide he had at occasional times suffered from fits resulting in a loss of consciousness; that at those times, covering a period of from days to several weeks, he would have spells of sickness accompanied by lapses of memory; that sometimes also during these spells he would hear voices of unknown and unseen persons telling him that he was threatened with great injury or death by some person, and urging him to seek and kill such person to protect himself, and the voices kept constantly urging him to do the things they said; that he was made angry and fearful at these times by these suggestions and promptings; that a feeling or impulse to do as the voices urged would come over him, which he would try to resist, but which he could not succeed in doing; that for a week previous to the homicide he was suffering under one of these spells, etc. The claim on his behalf was that he was subject to intermittent attacks of a particular phase of epileptic insanity defined by the medical experts called in his behalf as psychic epileptic equivalent, a condition where instead of the usual convulsive phenomena ordinarily known as epileptic fits there are substituted from time to time certain disturbances of mentality during which the consciousness of the individual afflicted is so altered that he is deprived of the full possession of his usual faculties, etc. These medical experts gave it as their opinion from the evidence in the case and personal examination of the defendant that he was suffering from a spell of this phase of insanity when he committed the homicide, and was insane when he did so, so that by reason thereof he was incapable of having a malicious intent to kill and incapable of deliberating on the act of killing which he committed. The court permitted these experts to testify that from the nature of his insanity when the defendant committed the homicide he was incapable of resisting an impulse to do it, but the court at the same time stated that nevertheless it would instruct the jury that in California the doctrine of irresistible impulse as an excuse for crime did not exist. Other medical experts expressed the opinion, based also on the evidence in the case and personal examination of the defendant, that he was not suffering from epileptic insanity when he committed the homicide; that he was entirely sane at the time, having mental capacity to know and understand the nature and character of the act he was committing. The result was a conviction, which, as above stated, is affirmed.

Society Proceedings

COMING MEETINGS

AMERICAN MEDICAL ASSOCIATION, SAN FRANCISCO, JUNE 21-25.

Alabama State Medical Association, Birmingham, Apr. 20-23.
Am. Assn. Gen.-Urin. Surgs., White Sulphur Springs, W. Va., May 18-20.
American Association of Immunologists, Washington, May 10.
American Dermatological Association, New York, May 13-15.
American Gastro-Enterological Association, Baltimore, May 10-11.
Amer. Gynecological Society, White Sulphur Springs, W. Va., May 18-20.
American Medico-Psychological Assn., Fortress Monroe, Va., May 11-14.
American Neurological Association, New York City, May 6-8.
American Orthopedic Association, Detroit, May 6-8.
American Pediatric Society, Lakewood, N. J., May, 25-27.
American Psychopathological Association, New York, May 5.
American Urological Association, Baltimore, April 13-14.
Arkansas Medical Society, Little Rock, May 3-6.
Association of American Physicians, Washington, May 11-12.
Conf. of State and Prov. Boards of North America, Washington, May 14.
Connecticut State Medical Society, Hartford, May 19-20.
Florida Medical Association, De Land, May 12-14.
Georgia Medical Association, Macon, April 21-23.
Illinois State Medical Society, Springfield, May 19-20.
Iowa State Medical Society, Waterloo, May 12-14.
Kansas Medical Society, Kansas City, May 5-6.
Louisiana State Medical Society, Lake Charles, April 20-22.
Maryland Medical and Chir. Faculty, Baltimore, April 27-29.
Mississippi State Med. Association, Hattiesburg, May 11.
Missouri State Medical Association, St. Joseph, May 10-12.
Nat'l Assn. for the Study of Epilepsy, Old Point Comfort, Va., May 10.
Nebraska State Medical Association, Hastings, May 18-20.
New Hampshire Medical Society, Concord, May 19.
New York State Medical Society, Buffalo, April 27-29.
North Dakota State Medical Association, Bismarck, May 12-13.
Ohio State Medical Association, Cincinnati, May 4-6.
Oklahoma State Medical Association, Bartlesville, May 11-13.
South Carolina Medical Association, Greenwood, April 20-22.
Tennessee State Medical Association, Nashville, April 13-15.
Texas State Medical Association, Ft. Worth, May 4-6.
West Virginia State Medical Association, Huntington, May 12-14.

CHICAGO MEDICAL SOCIETY

Meeting held March 24, 1915

The President, DR. JAMES A. CLARK, in the Chair

Eutocia by Means of Nitrous Oxid Gas Analgesia; A Safe Substitute for the Freiburg Method

DR. FRANK W. LYNCH: Sir Humphrey Davy in 1800 suggested the use of nitrous oxid gas as an anesthetic. Faraday in 1818 advocated the use of ether, yet to Simpson belongs the honor of introducing ether, chloroform and chloral in obstetric practice. The general practitioner is anxious to adopt a safe and efficient method. So-called "twilight sleep" is now under proper investigation. The whole truth is not known. There are objections to the method. It is not suitable for general practice, nor is it suitable for all cases that come to labor. It is not successful in all cases in which it is judged applicable. It carries potential danger to the child.

Since July, 1913, I have used nitrous oxid gas for long continued analgesia in my obstetric work. Analgesia has been maintained from the latter part of the first stage, or from the time when the pains became severe, and all the women said that pain was negligible and practically nil. Analgesia was continued in 34 cases more than one hour; in 32 cases more than two hours; in 12 cases more than three hours; in 4 cases more than four hours, and in 1 case more than six hours. Three cases were terminated with forceps with the

gas carried to the surgical degree. There was no case of inertia, postpartum hemorrhage or shock. The method is suitable for patients at their homes or in the hospital.

The best results are obtained with a nosepiece such as is used by dentists, but the ordinary mouthpiece will answer. I have hitherto started the treatment when the pains became severe enough to cause complaint. Pure nitrous oxid gas is turned full on at the beginning of the pain, and the patient is told to breathe deeply but rapidly through the nose. Five or six respirations suffice to produce analgesia, even in the presence of uterine contraction. The nosepiece is now placed over the mouth; the patient is told to breathe through the mouth, and analgesia is maintained by admixing oxygen with the gas until the end of the pain. This process is repeated with each pain. The percentage of oxygen varies from nothing to 10 per cent. It is more difficult to maintain analgesia with the mouthpiece without wasting much gas, since the depth of anesthesia is now more difficult to control. Oxygen must be used more freely. When the head distends the perineum, the anesthesia is carried to the surgical degree, and the color of the patient is controlled with oxygen. With good apparatus the cost is not over one cent per minute. With a poor apparatus it may cost as much as three dollars per hour.

Gas is the ideal drug for conducting labors. It is the most volatile of anesthetics, in that it acts more quickly, and its effects pass away very rapidly. It is practically free from danger even when continued for analgesia extending over many hours.

DISCUSSION

DR. J. CLARENCE WEBSTER: Ten or eleven years ago I felt that the routine use of ether in surgery and obstetrics was wrong, and began a long series of cases working from pure nitrous oxid up to mixtures of nitrous oxid and oxygen. While Paul Baer of France referred to the additional value of nitrous oxid when it is mixed with oxygen, the late Dr. Edmund Andrews of Chicago directed attention to the value of nitrous oxid and oxygen in the eighties independently of Baer. I first employed this anesthetic in eclamptic and nephritic cases in which operative measures were indicated; then later extended its use to cesarean sections in cases in which, on account of the condition of the kidneys of these patients, I was afraid to give a general anesthetic. Dr. Lynch has endeavored to standardize the administration, giving the smallest possible amount at which obstetricians aim in the administration of any anesthetic. The only point that requires now to be developed is economy of administration.

Another great advantage is that its administration can be carried on by the practitioner in the home of the patient. While a large number of patients are attended in hospitals, by far the greater majority are delivered in their own homes. Physicians should not go crazy, lose their heads and get the idea that labor is an entirely pathologic process, like a surgical operation, requiring the administration of some anesthetic or sedative drug from beginning to end. The advantages of nitrous oxid gas analgesia in obstetrics are that the apparatus is simple, can be easily transported, and may be used by any practitioner. Deep anesthesia is not necessary. There are no ill effects to mother or child. The strength of the uterine contractions is not diminished, no matter how long the administration of the nitrous oxid gas is continued. The administration is under control all the time and can be stopped at any moment. This is a very decided advantage which is not possessed by any method which necessitates placing a patient under the influence of drugs administered internally.

DR. N. SPROAT HEANEY: Nothing can be added to what Dr. Lynch has said regarding the safety of the method for both mother and child. There is not the least difficulty with the child. It is not necessary to apply artificial respiration or to explain to the parents afterward that any trouble manifested on the part of the child in nursing is due to some difficulty at birth. The method is so simple that the practitioner can trust the use of the apparatus to an attendant while he gives his attention to the case. I have found that patients are always willing to provide for any expense if they are given the assurance of freedom from pain by this method. It is not very expensive. I myself have no special apparatus for the mixture of gas and oxygen; consequently I simply use nitrous oxid gas, and the results I have obtained are just as good as those I have secured when I gave both gas and oxygen to patients.

DR. ISABELLA C. HERB: Scopolamin is not a respiratory stimulant in any dose, and when given in large doses it is actively depressing. Morphin, when it is given in any sized dose to produce systemic effects, is a respiratory depressant. Scopolamin raises blood pressure, but does not affect the pulse rate, while morphin raises blood pressure and also increases the pulse rate. Morphin depresses the brain and produces sleep. Scopolamin also depresses the brain and usually produces sleep, but may produce likewise delirium and hallucinations and a great amount of restlessness. Both morphin and scopolamin depress kidney function; consequently their use would be especially hazardous in a woman whose kidneys are undergoing a pathologic process which will interfere or decrease their functionating capacity. Under such circumstance uremic coma may be precipitated if the kidney function is depressed for several hours.

As labor pains are not continuous, any agent which will give relief during uterine contraction, and whose action will stop after the cessation of pain, is a most desirable agent. Such an agent we have in nitrous oxid gas, which is quick and evanescent in its action, and so far as the tissues are concerned, is an inert substance. There are no poisons to be eliminated. Too much emphasis is placed on the cost of nitrous oxid gas. Safety for the mother and child should be the all-important question and predominate over all others. It requires some intelligence to give a hypodermic injection, but it requires no special training, no special knowledge, no special expertness to administer gas up to the point of analgesia.

DR. CARL H. DAVIS: My experience with nitrous oxid gas in labor dates back to 1909, when it was my good fortune to give the first nitrous oxid gas analgesia for a cesarean section done at the Presbyterian Hospital. During that period I gave nitrous oxid gas for versions, vaginal sections and for normal deliveries. The longest time which any one patient received nitrous oxid was not over two hours, and that was prior to a forceps delivery in a primipara. The method at that time was to give a few whiffs of gas during the height of the pain merely to lessen suffering, and then as delivery was approached, with the head bulging the perineum, the woman was more completely anesthetized. Since the introduction of the nasal inhaler and of the newest types of gas machines, the cost of administering nitrous oxid has been materially decreased. Instead of costing five dollars an hour as it did a few years ago, it can now be administered for a small part of that amount. One of the chief difficulties of the use of nitrous oxid by the general practitioner is that of having his hands scrubbed and having to regulate the gas machine. It occurs to me that a machine can be devised which will permit the practitioner to regulate the gas and at the same time to care for the patient. Such a machine has been constructed and will be exhibited by Dr. Lynch. From my experience with nitrous oxid gas, I feel that it can be used by the general practitioner as well as by the specialist, and I believe it will have a wide range of usefulness in the future.

DR. HENRY F. LEWIS: If a patient can be made comfortable and free from pain without too great a sacrifice of safety, it should be done. Inasmuch as Dr. Lynch has referred to the method of nitrous oxid gas being used principally in the second stage and toward the end of labor, I should like to ask him a question: whether he would advise the use of nitrous oxid gas in the beginning of a labor, with a long first stage?

DR. BERTHA VAN HOOSEN: I wish to report briefly the last fifty cases we have had at the Mary Thompson Hospital. Of these there were twenty-four primiparas, and twenty-six multiparas. There was one high forceps case and the baby was asphyxiated. It was the only baby that had to be

resuscitated that did not breathe as soon as it was born. In the primiparas the average labor was two and one-half hours; in the multiparas the average labor was six hours. No children were born dead with the exception of a five months' fetus which probably died before labor began. No heart beat was heard, and the child was macerated beyond recognition. All of the women were able to nurse their children. All of these cases were given a fixed dose, namely, 1/100 grain of scopolamin, and ⅛ grain of morphin as soon as it was known they were in labor. These doses were repeated at the end of one-half or one hour, according to the severity of the pain, and at the end of the next half hour or hour. They were kept under the anesthetic by repeating the 1/100 grain of scopolamin every two hours until labor was completed. Thirty of these patients took from 2 to 5 doses; four of them had as high as 9, 12 and 15 doses; two of them had 15 doses. We have not had any blue babies. We use a fixed dose, and not the Freiburg dosage. We feel the Freiburg dosage is not satisfactory and we would not get perfect results by it. There was perfect analgesia in every one of the fifty cases.

DR. JOSEPH L. BAER: At a previous meeting of this society it was my privilege to report a series of thirty-nine obstetric cases which were conducted at the Michael Reese Hospital since the first of January. This series has since grown to seventy under scopolamin-morphin anesthesia and has been terminated. The method was conducted under the strictest precautions for observation and control that could be devised by Drs. Frankenthal and Cary. Two nurses were employed for the purpose who alternated, spending their whole time in the delivery room. Two interns were assigned to the obstetric service, devoting their whole time to the study of these cases, and I spent most of my time there with them. I think the method may be summed up in a phrase coined by Dr. Cary as an "obstetric jag." Every patient on whom we started this method was a matter for concern until she had been delivered. We have had blue babies. We have had almost every complication and disaster spoken of from this particular method of anesthesia. Speaking for myself—and without consultation I think I can speak for Dr. Frankenthal and Dr. Cary also—anything that will take the place of scopolamin and morphin, if they have taken a foothold, would be an improvement.

I held the position of anesthetist at the Michael Reese Hospital for a number of years before I became associated with the obstetric staff, and I gave nitrous oxid and oxygen anesthesias in most of the private surgical cases in which operation was performed by members of the staff, and from my experience nitrous oxid and oxygen are safe even in the hands of those who have little training. This of itself is worth considering.

DR. CHARLES B. REED: I hope that we shall have a definite and satisfactory anesthesia for all obstetric cases. My own experience has been confined recently to the study of the scopolamin-morphin method at Wesley Memorial Hospital. We have had approximately seventy-odd cases there. We have had the usual run of delirium, etc., which Dr. Baer spoke of, but this occurred in Jewish women, and I believe that the highly sensitive nervous system of that race is not adapted to the use of scopolamin-morphin. We have had no blue babies. We have lost no mothers and no babies. We have found the method fairly satisfactory. We use it in the second stage. We have had no labors practically over eight hours, and we are apparently satisfied to continue the method.

DR. JUNIUS C. HOAG: I think the expression used by Dr. Cary of "obstetric jag" is very apt. It may be called that or an "obstetric debauch." I started last summer for Freiburg and was kept out of Germany by the war. Since I have become familiar with the scopolamin-morphin method, I do not regret being unable to reach Freiburg. After some of the hysteric manifestations we have had with regard to the scopolamin-morphin method, it is refreshing and encouraging and hopeful to listen to such reports as Dr. Lynch has brought forward. I have used the method in fairly normal but protracted cases of labor, and also in cases of cesarean section. I have practiced medicine long enough, so that I have gone through a good many furores or manifestations of hysteria over different methods, and I prognosticate that the scopolamin-morphin method will not be of long duration.

DR. WILLIAM RITTENHOUSE: For the last eight years I have been using morphin and scopolamin more or less whenever they seem to be indicated by an undue amount of suffering on part of my patient. I give it in the first stage more frequently because my experience has been that patients suffer most acutely in the first stage. The suffering of the second stage is more commonly controlled better by whatever anesthetic is selected for delivery.

DR. LYNCH: I am delighted to see that the scopolamin-morphin method of anesthesia is being properly investigated. I welcome such reports as those that have been given, as presently the truth will be known. Such a report as Dr. Baer has given is worth more than thousands of cases to the contrary, because it emanates from a well-organized clinic where the scopolamin-morphin anesthesia has been carried on under proper auspices. Scopolamin-morphin anesthesia has failed with me, or I would not be advocating nitrous oxid gas and oxygen analgesia.

In such a case as Dr. Lewis has mentioned, I would begin administering the gas as soon as the patient complains of pain, and when I got tired, I would have the nurse continue giving the gas for some time, and then relieve her. Six or seven hours is a long time for any one person to continue giving the gas.

[Dr. Lynch exhibited several types of portable and non-portable apparatus for nitrous oxid-oxygen anesthesia. The following is a list of recent articles in THE JOURNAL describing such instruments:

Flagg, P. J.: A Previously Unemphasized Feature in the Construction of Nitrous Oxid-Oxygen-Ether Apparatus, THE JOURNAL A. M. A., Jan. 3, 1914, p. 35.

Moorhead, S. W.: A Portable Nitrous Oxid-Oxygen Apparatus, THE JOURNAL A. M. A., April 25, 1914, p. 1326.

Miller, A. H.: Apparatus for Nitrous Oxid-Oxygen Anesthesia, THE JOURNAL A. M. A., Oct. 24, 1914, p. 1474.

Sloan, H. G.: Nitrous Oxid and Oxygen Anesthesia, THE JOURNAL A. M. A., Sept. 13, 1913, p. 838.]

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Physiology, Baltimore

March, XXXVI, No. 4, pp. 353-505

1 Feeding Experiments on Rats. J. F. Gudernatsch, New York.
2 *Changes in Content of Hemoglobin and Red Corpuscles in Blood of Man at High Altitudes. E. C. Schneider and L. C. Havens, Colorado Springs, Colo.
3 Influence of Light on Reproduction in Vorticella. I. H. Hyde and C. Spreier, Kansas City, Kan.
4 *Experiments on Roentgen Radiation as Cause of Permeability Changes. A. Richards, Woods Hole, Mass.
5 *Vasotonic and Vasoreflex Center. W. T. Porter, Boston.
6 *Effect of Partial Suprarenal Deficiency on Sympathetic Irritability. R. G. Hoskins, Chicago.
7 *Inversion of Respiratory Waves in Sphygmomanometer Records of Arterial Pressure in Man. C. D. Snyder, Baltimore.
8 Toxicity of Oil of Chenopodium. W. Salant and E. K. Nelson, Washington, D. C.
9 *Action of Glandular Extracts on Secretion of Cerebrospinal Fluid. C. H. Frazier and M. M. Peet, Philadelphia.
10 Some Metabolic Influences of Bathing in Great Salt Lake. H. I. Mattill and H. A. Mattill, Salt Lake City.

2. **Effect of High Altitude on Blood.**—It is stated by Schneider and Havens that at low altitudes abdominal massage increases the number of red corpuscles and percentage of hemoglobin in the peripheral capillaries. In men partially or wholly acclimatized to a high altitude abdominal massage lowers the content of hemoglobin and red corpuscles. Before the subject reacts to the influence of lowered barometric pressure, abdominal massage may raise the content of hemoglobin and red corpuscles. Physical exertion at low altitudes concentrates the blood but during a sojourn of

four days to two weeks at a high altitude this reaction occurs only in the period before the number of red corpuscles and percentages of hemoglobin have increased. In a subject who had lived five and a half months at 14,109 feet a given exercise caused a slight concentration of the blood but not as much as it did at the altitude of Colorado Springs.

While there is a reserve supply of corpuscles at low altitudes this is lacking for some time during residence at the high altitude. The number of red corpuscles and percentage of hemoglobin do not increase immediately on arrival at the high altitude. Usually there occurs within twenty-four hours a marked increase in both. The rise in hemoglobin and red corpuscles for a particular subject during the first three or four days spent at a high altitude is not the same for different visits. The increase is most rapid in subjects who have taken regular exercise before ascending to the high altitude. Fatigue due to walking up a mountain delays the altitude increase in hemoglobin and red corpuscles. The rapid increase in the number of red corpuscles and percentage of hemoglobin the first two or three days spent at a high altitude is due in part to the throwing into the general circulation of a large mass of reserve corpuscles, and in part to a loss of fluid from the blood. The blood-forming centers also become more active and increase the total number of corpuscles and total amount of hemoglobin.

4. **Effect of Roentgen Rays on Cell Permeability.**—Richards believes that the results of his experiments warrant the conclusion that the effects which are described as the result of exposure to Roentgen rays are not to be attributed to permeability changes caused by the radiation, and the evidence available at the present time points to a theory of enzyme modification as the best explanation of the effects of radioactivity on the structure and functions of protoplasm.

5. **Vasotonic and Vasoreflex Center.**—Porter's experiments show that curare may more than double the sciatic and the depressor reflex change in blood pressure while the arterial tonus is left substantially unchanged. To him it seems impossible to reconcile these results with the present conception of the vasomotor center. Unless this can be done, he says, it will be necessary to accept a vasotonic and a vasoreflex center related but separable.

6. **Suprarenal Deficiency and Sympathetic Irritability.**—From one-half to seven-tenths of the suprarenal tissue was removed by Hoskins from dogs in various cases, at a single operation. At intervals of one to eight days after the operation the blood pressure and the vasomotor reaction to nicotin were decreased. The reaction to epinephrin was not similarly affected. Partial suprarenal deficiency therefore results in a depression of the irritability of the sympathetic nervous system proper. Hoskins suggests that this depression is probably only one phase of a generalized interference with fundamental metabolism.

7. **Inversion of Respiratory Waves.**—An argument is submitted by Snyder demonstrating deductively the following proposition: In case the actual respiratory movements in man are synchronously and graphically recorded together with the sphygmomanometer trace, and with the extra-arterial pressure set at various points above and below the diastolic pressure, then on inspection one ought to find an inversion of the respiratory wave in the blood pressure trace with reference to the waves of the respiration trace itself. This inversion of the respiratory wave in the sphygmomanometer trace ought to take place in the vicinity of diastolic pressure. Graphic records were taken on twenty-eight individuals, twenty of whom clearly showed inversion of the respiratory wave in the blood pressure trace. Reproductions of records illustrating the inverted wave are submitted in the report. The inversion of the respiratory wave is not always obtained; eight of the twenty-eight individuals failed to show it. The same individual, however, who did not show the inversion at one time occasionally was observed to show it at another time. No satisfactory explanation of this failure can at this time be given. It is suggested, and evidence is adducted showing, that the inversion of the respiratory wave in the blood pressure wave may itself at times serve as an additional test in the determination of the correct diastolic pressure in man.

9. **Glandular Extracts and Secretion of Cerebrospinal Fluid.**—From the experiments reported by Frazier and Peet it appears that saline extracts of pancreas, spleen, kidney, liver, ovary and testes do not influence the rate of secretion of the choroid plexus and that the apparent increased rate after the injection of extracts of these glands is a mechanical rather than a secretory effect. This mechanical effect is directly due to the fall in arterial blood pressure which increases the pressure in the cranial venous sinuses, thus forcing out the performed fluid in the ventricles and cisterna magna. Brain extract causes an increase in secretion independent of blood pressure changes. Thyroid extract, either from fresh glands or the commercial desiccated beef preparation is the only glandular substance which has a specific inhibitory effect on the secretory activity of the choroid plexus, quite independently of blood pressure changes.

Archives of Internal Medicine, Chicago

March, XV, No. 3, pp. 341-500

11 Malignant Sympathicus Tumor of Right Suprarenal. D. J. Glomset, Des Moines, Iowa.
12 *Uremia. N. B. Foster, New York.
13 *Effect of Anesthesia and Operation on Kidney Function, as Shown by Phenolsulphonephthalein Test. R. H. Miller and H. Cabot, Boston.
14 *Intestinal Obstruction. F. T. Murphy and B. Brooks, St. Louis.
15 Working Hypothesis of Hemoglobin Pigment Metabolism. T. Addis, San Francisco.
16 *Bacteriologic Examination of Enlarged Lymph Nodes Removed from Patient with Hodgkin's Disease. L. J. Rhea and E. H. Falconer, Montreal, Canada.
17 *Occurrence of Malignant Neoplasms in Young. A. S. Warthin, Ann Arbor, Mich.
18 Experimental Diabetes Insipidus in Dogs. S. A. Matthews, Lawrence, Kan.
19 *Use of Strychnin and Caffein as Cardiovascular Stimulants in Acute Infectious Diseases. L. H. Newburgh, Boston.
20 Immunity Tests in Coccidioidal Granuloma. J. V. Cooke, San Francisco.
21 Value of Electrocardiogram in Diagnosis of Cardiac Hypertrophy. E. W. Bridgman, Baltimore.

12. **Uremia.**—Foster is of the opinion that the trend of evidence points to tubular rather than glomerular involvement as the important factor in nitrogen retention, since the phenomenon is clearly manifested with experimental renal lesions that are almost, if not entirely, epithelial. It is then of considerable interest that the nearest approach to a purely tubular nephritis clinically is not marked by the highest degree of nitrogen retention. There arises then the question of degrees of structural damage in relation to function. With the contracted kidney there is so much destruction of all renal elements that it becomes quite impossible to assert that one structure is more damaged than another.

13. **Kidney Function as Shown by Phenolsulphonephthalein Test.**—Miller and Cabot summarize the results of their extensive investigations as follows: 1. The output of phenolsulphonephthalein by the kidneys grows progressively less with advancing years. 2. There is a normal daily variation in phenolsulphonephthalein excretion, influenced by many factors, the normal limits of which cannot be defined. 3. After operations under ether there is a decreased output of phenolsulphonephthalein, this decrease being greater in laparotomies than in the general average, and considerably greater in cancer cases. 4. As a general proposition, the sooner after operation the test is done the greater will be the decrease, and the output will have returned to about normal in from twenty-four to forty-eight hours. 5. The more ether that is used, and the longer the operation, the greater will be the decrease in phenolsulphonephthalein excretion. 6. Certain cases will not show decrease, but either no change or increase. Just which cases do, or will do this, cannot be stated. 7. Certain cases will show great decrease or almost total inhibition of the excretion without discoverable cause. Personal idiosyncrasy may enter into this. 8. Shock will cause great decrease in phenolsulphonephthalein excretion. So also will any condition of much impaired vitality. 9. There is no definite relation between decreased drug excretion and the occurrence of albuminuria after operation.

14. **Intestinal Obstruction.**—Summarizing the results of eighty-seven animal experiments Murphy and Brooks state that in intestinal obstruction, the content of the obstructed bowel contains a toxin which, when absorbed in sufficient amounts, produces definite symptoms and pathologic lesions and death. The toxins are the result of bacterial growth. They are not specific for any part of the intestinal tract, and may be formed in the gall-bladder. The chemical and physical characteristics of the toxic substance may vary with the length of time which the obstruction has existed as well as with the different conditions under which the obstruction occurs. This toxin may enter the circulation by way of the thoracic duct. Death after intestinal obstruction is the result of a toxemia which may be independent of infection of the peritoneal cavity or general circulation. This toxic substance does not pass through a normal mucous membrane. In the production of symptoms the factors which make this absorption possible are more important than the factors which produce the toxin. Interference with the circulation of the obstructed intestine is an essential factor in allowing this abnormal absorption. Simple obstruction of a segment of duodenum or jejunum results in earlier and severer symptoms than similar obstruction of a segment of ileum because the secretion into the lumen of the former leads to rapid distention and circulatory disturbance in the bowel wall. The symptoms and pathologic lesions following the intravenous administration of the contents of a segment of bowel after obstruction are the same as those described resulting from intravenous injection of certain of the ptomain poisons. In the surgical treatment of cases of intestinal obstruction, that part of the intestine with a mucous membrane which has been so damaged as to permit of abnormal absorption should be resected rather than drained.

16. **Lymph Nodes Removed from Patient with Hodgkin's Disease.**—Rhea and Falconer isolated from the enlarged lymph nodes of a patient who showed the clinical picture of Hodgkin's disease, and from whom excised glands histologically corresponded to this disease, a pure culture of a pleomorphic, Gram-positive, non-motile, non-acid fast, facultative anaerobic organism, similar to those described by Bunting and Yates. Cultures of the organism isolated have been repeatedly injected into the tissues about the axillae of an adult monkey (*Macacus rhesus*), but up to the present no conclusive results have been obtained.

17. **Occurrence of Malignant Neoplasms in Young.**—An analysis of 2,000 cases of malignant neoplasms was made by Warthin. The types of neoplasms were divided as follows: carcinoma 77, or 39.5 per cent.; sarcoma 92, or 47.3 per cent.; malignant teratoma 19, or 9.7 per cent.; malignant syncytioma 2, or 1 per cent.; endothelioma 5, or 2.5 per cent. Of the carcinomas the distribution as to locality was as follows: Antrum 1, breast 12, eye and conjunctiva 7, small intestine 1, colon 1, cecum 2, rectum 2, lip 9, lymph nodes 1, mouth 2, ovary 6, parotid 1, penis 2, tube 1, hand 1, leg 2, ear 1, cheek 2, nose 2, chin 1, elbow 1, stomach 2, pylorus 1, umbilicus 1, cervix of uterus 12, endometrium 2, thyroid 1.

The distribution of the sarcomas with respect to site was: bladder 2, jaw 7, femur 10, tibia 6, fibula 1, heel 1, foot 1, pelvis 3, humerus 2, ulna 2, radius 1, rib 1, scapula 1, clavicle 1, brain 1, breast 2, eye 5, eyelid 1, orbit 5, face 1, intestine 2, lymph nodes 10, muscle of abdomen 2, neck 4, nose 2, ovary 2, parotid 3, popliteal space 2, skin 5, body of uterus 4, cervix 2.

The distribution of the malignant teratomas was: cervix of uterus 1, kidney 4, ovary 2, testis 12. The endotheliomas were distributed as follows: chin 1, orbit 2, mouth 1, neck 1 as to age distribution. The curve is high during the first year, falls then to rise at puberty, after which there is a steady rise up to the limit of the period, aged 30. The large number in the first year emphasizes the importance of the *congenital factor*, and this influence is felt in the case of the majority of the tumors found up to the period of sexual ripeness, even when no actual evidences of a teratoid nature could be demonstrated in the tumor. Sarcoma predominates in the period of infancy and childhood; but the *parallel increase of both sarcoma and carcinoma with age is noteworthy and in contradiction to the usual belief that sarcoma is essentially a disease of childhood.* The cases of malignant teratoma fall in the periods of early childhood and developing sexual life. Particularly is this the case with the malignant teratomas of testis and ovary, the majority of these cases developing after puberty and in the early period of sexual maturity. No special relationship to the period of dentition is shown. No cases occurred in the fifth year, and none in the twelfth and thirteenth years. The number of cases in the years 6 to 11 was too small to show any conclusion. The main facts shown are the relatively high number of congenital tumors, the gradual increase in incidence of tumors from the age of adolescence into mature life, the relation of malignant teratomas to puberty and the parallel incidence of carcinoma and sarcoma.

19. **Use of Strychnin in Acute Infectious Diseases.**—Strychnin sulphate, in medicinal doses, Newburgh says, does not increase the output from the heart, slow the pulse or materially raise the blood pressure. There is no logical basis for its use as a cardiovascular stimulant. Caffein-sodio-salicylate, in the doses employed, does not raise the blood pressure or slow the pulse.

Archives of Pediatrics, New York

February, XXXII, No. 2, pp. 81-160

22 Renal Infantilism. Report of Case. L. Porter, San Francisco.
23 Cutaneous Regional Variation in Pirquet Reaction. J. A. Colliver, Los Angeles.
24 Use of Liquid Paraffin in Infants. H. K. Hill, Philadelphia.
25 Edema Complicating Gastro-Enteritis. J. F. Sinclair and J. A. Speed, Philadelphia.
26 Relation of Pediatrist to Community. W. N. Bradley, Philadelphia.

Boston Medical and Surgical Journal

March 18, CLXXII, No. 11, pp. 393-428

27 Progressive Neuromuscular Atrophy; Report of Three Cases in Family Without Heredity. F. F. Hatch, Boston.
28 *Value of Gold Sol Test (Lange) in Cerebrospinal Fluid Obtained Post Mortem. H. C. Solomon and E. S. Welles, Boston.
29 Enchondroma. Review of Literature and Report of Three Cases. L. A. O. Godda, Boston.
30 Study of Disturbances of Stomach. H. F. Hewes, Boston.
31 Study of Efficiency of Mixed Toxins (Coley) in Inoperable Sarcoma. Analysis of One Hundred and Thirty-Four Microscopically Proved Cases. T. W. Harmer, Boston.

28. **Value of Gold Sol Tests in Cerebrospinal Fluid Obtained Post Mortem.**—The spinal fluids obtained post mortem from the lumbar region in a series of twenty-six cases were tested by Solomon and Welles. Cases that are clinically fairly stationary gave the same results ante and post mortem with the gold sol test. Post-mortem spinal fluid from cases of general paresis usually gave the typical "paretic reaction," such as given by similar cases ante mortem. Post-mortem spinal fluid from cases of a non-inflammatory nature may give the expected negative reaction; but "unexpected" positive reactions are obtained with certain post-mortem spinal fluids, as are found with certain ante-mortem fluids from similar types of cases. The results with post-mortem fluids tested by the gold sol test of Lange are comparable to those obtained with the ante-mortem spinal fluid and when the body is well preserved or the fluid obtained early, the results are the same as would have been obtained just prior to death. Therefore, it is concluded that the gold sol test has the same value in the examination of cerebrospinal fluid obtained post mortem from the lumbar region as ante mortem, and the results may be similarly interpreted for diagnostic purposes.

Bulletin of Johns Hopkins Hospital, Baltimore

March, XXVI, No. 289, pp. 69-92

32 *Osteogenic Power of Periosteum: Bone Transplantation. J. S. Davis, Baltimore, and J. A. Hunnicutt, Athens, Ga.
33 Jonathan Hutchinson Iconography. W. Osler.
34 Account of Surgery and Surgeons of American Revolution. W. B. Platt, Baltimore.

32. **Osteogenic Power of Periosteum: Bone Transplantation.**—One hundred and sixty-seven experiments were done by

Davis and Hunnicutt on fifty dogs and seventeen rabbits. The results were controlled by careful dissection and by Roentgen-ray and microscopic examinations. Free periosteal transplants did not produce bone in the large majority of experiments, even though osteoblasts were adherent to the transplants. Pedunculated flaps of periosteum did not produce new bone. Free periosteal transplants and pedunculated periosteal flaps, with bone shavings attached, produced bone in each experiment. From this the authors surmise that bone particles had been accidentally transplanted in those experiments in which bone was found after the transplantation of free periosteum.

The removal of periosteum had little, if any, effect on the nutrition of a bone. The surface from which the periosteum was removed showed very little overgrowth of bone, unless there had been considerable irritation of that surface, either by trauma or by infection. The area from which the periosteum had been taken was covered with a thin, very adherent fibrous membrane; or the muscle tissue was adherent to the denuded area. Absorption occurred when a silver ring was snugly applied around a bone over the periosteum, and also at times when it was applied around denuded bone. There was no new bone formed from either the periosteum or bone, when a silver ring was placed around a bone beneath the periosteum. Both auto and isobone, without periosteum, were effective in repairing skull defects.

Auto and isobone without periosteum, when transplanted into the periosteal tube after subperiosteal resection of a rib, caused stimulation of bone growth from the periosteum and also from the rib ends. Transplants covered with periosteum, and also foreign bodies, stimulated bone growth only from the rib ends. Transplants of the same size in a periosteal tube, after subperiosteal resection, under exactly the same conditions, acted quite differently. After subperiosteal resection of a portion of a bone, the growth of bone in repairing the defect was from the bone stumps, the periosteum acting as a limiting membrane. Autobone, both with and without periosteum, lived and was successfully transplanted to fill defects in bone. Clinically, it is advisable to transplant bone covered in part at least, with periosteum. Isobone in a bone defect acted as a scaffold for the growth of new bone from the living bone stumps, but there was ultimate absorption of the transplant. Autobone, both with and without periosteum, was absorbed when transplanted into soft parts. The periosteum seemed to have some protective influence against early absorption. The fat of those transplants which had grown together and produced new bone is doubtful, but as absorption was going on, and as the tendency of free bone in the soft parts was to be absorbed, it seems probable that absorption would eventually have occurred. The same may be said of isobone in soft parts, except that in no instance was any new bone formed from the transplant.

California State Journal of Medicine, San Francisco

March, XIII, No. 3, pp. 87-128

35 Dystocia Due to Funnel Pelvis. J. M. Slemons, San Francisco.
36 Increased Blood Pressure. J. M. King, Los Angeles.
37 Case of Anthrax. J. C. Fallon, Reno, Nev.
38 Perversion of Forces in and About Oral Cavity. B. F. Gray, Colorado Springs, Colo.
39 Endocarditis with Streptococcemia. Infection from Tonsils. W. H. Strietmann, Oakland.
40 After Medicine What? R. Russ, San Francisco.
41 Spinal Anesthesia. L. L. Stanley, San Quentin.
42 Combined Treatment of Syphilis with Mercury and Salvarsan. G. W. Hartman, San Francisco.
43 Clinical Value of Percussion of Skull. W. F. Beerman, San Francisco.
44 Gun-Shot Wound of Ear. Report of Two Cases. C. F. Welty, San Francisco.
45 Report of Unusual Case of Labyrinthine Deafness. G. P. Wintermute, San Francisco.

Canadian Medical Association Journal, Toronto

March, V, No. 3, pp. 181-276

46 Involvement of Central Nervous System in Syphilis. A. W. M. Ellis, New York.
47 Pyelitis as Complication of Pregnancy and Puerperium. B. P. Watson, Toronto.
48 Early Diagnosis of Gastric Carcinoma. A. W. George and I. Gerber, Boston.
49 Boas-Oppler Bacillus (Lactic Acid Bacillus), and Diagnostic Importance of Its Presence in Gastric Contents. G. Chambers, Toronto.
50 Artificial Pneumothorax in Treatment of Tuberculosis. W. B. Kendall, Gravenhurst.
51 Case of Extramedullary Angioma of Spinal Cord. W. McKeown and J. Loudon, Toronto.

Iowa State Medical Society Journal, Des Moines

March, V, No. 3, pp. 89-128

52 Rabies in Iowa. H. Albert, Iowa City.
53 What Public Should Know About Cancer. L. W. Littig, Davenport.
54 Sex Teachings. G. C. Moorhead, Ida Grove.
55 Twilight Sleep. C. E. Dakin, Mason City.
56 Case of Pellagra. F. A. Ely, Des Moines.
57 Submucous Resection of Nasal Septum. F. E. V. Shore, Des Moines.
58 *Vaccine Treatment of Infections. M. G. Sloan, Des Moines.
59 Case of Hemophilia Treated with Horse Serum. G. F. Dolmage, Buffalo Center.

58. **Vaccine Treatment of Infections.**—There can be no question says Sloan but that in properly administered autogenous vaccines we have a fairly successful method of treating a large class of infections in which heretofore we have been practically helpless.

Journal of Cutaneous Diseases, New York

March, XXXIII, No. 3, pp. 161-248

60 Xeroderma Pigmentosum Following Severe Sun Exposure. Report of Two Cases. W. T. Corlett, Cleveland.
61 *Urticaria Pigmentosa, Particularly in Regard to Its Histology. F. C. Knowles, Philadelphia.
62 *Vaccine Treatment of Ringworm of Scalp. A. Strickler, Philadelphia.
63 *Purpura Annularis Telangiectodes. G. M. MacKee, New York.

61. Abstracted in THE JOURNAL, June 20, 1914, p. 1989.

62. **Vaccine Treatment of Ringworm of Scalp.**—From an experience with this method of treatment extending over seven months, Strickler concludes that tinea tonsurans can be cured by vaccine. How great is the proportion of cures which can be obtained by this method of treatment alone, he is not prepared to say, because the cases so treated by him are too few to permit of such conclusions. He feels that it should prove valuable in conjunction with local treatment. It should shorten the time of treatment and possibly place this therapeutic measure on a par, so far as time goes, with the Roentgen-ray method of treatment, without sharing in the dangers of the latter method. In the first effort to make a vaccine from tinea tonsurans, suspicious hairs were obtained from the scalp of three patients. These hairs were soaked in absolute alcohol for fifteen minutes, then immersed in sterile salt solution and transplanted by a sterilized forceps to "French proof agar" in an Erlenmeyer flask and allowed to grow for twenty-four days. Crystals of sodium chlorid, chemically pure were rubbed up with the growth and after triturating it for some ten minutes, rubbed up so finely as to leave but a very few small particles, thus eliminating the necessity of filtration of the solution. To this enough sterile distilled water was added to make a normal saline solution.

From the growth on an ordinary Erlenmeyer flask, about 500 c.c. of vaccine were made up. To this 8 to 10 c.c. of chloroform were added to kill the growth, and then the vaccine was heated to 60 C. for one hour. Controls for living fungi were made on French proof agar, and for pyogenic organisms, on agar. The vaccine was preserved by the addition of sufficient phenol to bring it up to 0.25 per cent. It was then tubed in sterile vials and was ready for use.

The vaccine may be employed in doses varying from 0.5 c.c. up to 4 c.c. It has been found of no value to employ so large a dosage as the latter; the usual dose varied between 1 c.c. and 2 c.c. The injections were given at intervals of three days. The region between the scapulae, in which there is considerable loose tissue, and the buttock, were the areas chosen for injection, preference being given to the former. About thirty-six hours after the injection, but only after the patient has had six or seven injections, an infiltrated area

develops at times, at the point of injection. This infiltration can be made to disappear by painting with tincture of iodin and applying a dressing of ichthyol ointment once daily. In no instance was there any constitutional reaction following the injections. The number of injections varied from seven in some instances up to seventeen in others.

63. Abstracted in THE JOURNAL, June 13, 1914, p. 1920.

Journal of Outdoor Life, New York

March, XII, No. 3, pp. 85-115

64 Open Air School Exhibit at Panama-Pacific Exposition. S. C. Kingsley, Chicago.
65 Why Are Coughs? E. F. Bowers.
66 Home or Climatic Treatment, Which? T. Frazer, Asheville, N. C.
67 Social Service Nurse. J. A. Miller, New York.
68 Roentgen Ray in Tuberculosis Sanatorium. W. A. Gekler, Rockville, Ind.
69 What We Should Know About Tuberculosis. J. J. Lloyd, Catawba Sanatorium, Va.
70 Nostrum Evil. G. M. Kober, Washington, D. C.
71 Moving Pictures for Inward Eye. M. S. Labaree, Hartford, Conn.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

March, VI, No. 4, pp. 413-532

72 Helenin. P. D. Lamson, Boston.
73 Action of Certain Quarternary Ammonium Bases. J. H. Burn and H. H. Dale, London.
74 Quantitative Observations on Antagonism. A. R. Cushny, London.
75 *Pharmacology of Respiratory Center. H. A. R. Cushny and C. C. Lieb, London.
76 Effect of Homatropin on Vagus. H. S. Zulick, Philadelphia.
77 Physiologic Actions of Homocholins and Some of Their Derivatives. R. Hunt, Boston.
78 *Influence of Drugs on Human Sensory Threshold. E. G. Martin, C. M. Grace and J. H. McGuire, Boston.

75. **Pharmacology of Respiratory Center.**—Cushny and Lieb found that the action of morphin and of ethyl carbamate (urethan) on the respiratory center offer typical differences. Morphin slows the breathing in air without materially decreasing the depth, while ethyl carbamate may induce no change except that arising from the general narcosis. The reaction to CO_2 inhalation under morphin is of the same type as the normal—the respiration increases in depth and rate; the increase in depth may be as great or greater than the normal, while the rate increases in the same ratio as holds in the normal animal when dilute CO_2 is substituted for air; the actual increase is of course much smaller than in normal animals. The reaction to CO_2 inhalation under ethyl carbamate remains of the normal type as far as the depth is concerned, but changes its character as regards the rate—as the dose of ethyl carbamate increases, the acceleration under CO_2 diminishes until no acceleration is obtained, and ultimately CO_2 in most instances actually slows the respiration. Oxygen lack has the same effect as CO_2 inhalation under ethyl carbamate or morphin. The CO_2 concentration in the blood increases under ethyl carbamate poisoning and also under morphin, though more slowly. But this increase can not be considered the cause of the reversed action of CO_2 inhalation under ethyl carbamate. Similarly the fall in blood pressure does not account for the reversal. The reaction by apnea to rapid artificial inflation of the lungs is not materially altered in deep ethyl carbamate poisoning; it may be somewhat longer. Under morphin the phase of apnea is distinctly prolonged.

The slowing of the respiration under morphin is ascribed to an action on the intrinsic rhythm of the respiratory center which is rendered slower. The reaction of this depressed center to the hormones of the blood and to nervous reflexes appears not to be different in character from that of the normal center. In ethyl carbamate poisoning, and presumably in poisoning from other members of the alcohol-chloroform group, the intrinsic rhythm of the center is not depressed to the same extent and the respiration may remain normal in rate, though it is often slow. The reaction to reflexes also remains of the normal type. But the reaction to the blood gases is altered, so that increased CO_2 or lessened O_2 has less accelerating action than normally, and finally may actually slow and stop the breathing. The hormone thus loses its stimulating effect and exercises only its depressant effect even in low concentrations, while in the normal animal this depressant action is only elicited by high concentrations. In death from morphin poisoning, the respiration fails because the intrinsic rhythm of the center is abolished, while in ethyl carbamate poisoning the breathing ceases mainly because the center responds by slowing, and finally by arrest, to the accumulated CO_2 instead of accelerating and thus eliminating it. While the morphin and ethyl carbamate thus differ in their action on the respiratory rhythm, they both have less effect on the strength of the impulses emitted, as measured by the depth of the breathing, which appears to depend exclusively on the CO_2 concentration in the blood and center under each of these poisons.

78. **Influence of Drugs on Sensory Threshold.**—Two subjects studied by the authors showed marked lowering of general sensitiveness within one hour after the administration of acetphenetidin (5 to 15 grains) by mouth. The criterion was the threshold for electrocutaneous sensibility (Martin method). One of the subjects, the one with greater normal sensitiveness, gave evidence of a certain degree of tolerance after ten doses, distributed over a period of two months. The other subject reacted markedly throughout the investigation and was generally more affected by the larger doses than by the smaller ones.

Journal-Lancet, Minneapolis

March 15, XXXIV, No. 6, pp. 135-164

79 University-Mayo Affiliation. C. L. Greene, St. Paul.
80 Mayo Foundation from Standpoint of Graduate School. G. S. Ford, Minneapolis.
81 Principles of Affiliation of Mayo Foundation and University. G. D. Head, Minneapolis.
82 Teeth as Foci of Infection. F. B. Kremer, Minneapolis.
83 Complicated Labor. Report of Case. J. Farrage, Park Rapids.

Kentucky Medical Journal, Bowling Green

March 1, XIII, No. 4, pp. 137-166

84 Relation of Pathologic Conditions in Otorhinology to General Medicine and Surgery. J. A. Stucky, Lexington.
85 Therapeutic Rationale. B. J. O'Connor, Louisville.
86 Ectopic Gestation. H. J. Phillips, Louisville.

Maine Medical Association Journal, Portland

March, V, No. 8, pp. 281-320

87 Pellagra. H. L. Bartlett, Norway.

Medical Record, New York

March 20, LXXXVII, No. 12, pp. 463-504

88 History of Pathologic Physiology of Icterus. C. G. Cumston, Geneva, Switzerland.
89 Clinical Features of Exophthalmic Goiter. C. V. R. Bumsted, Newark, N. J.
90 Intraspinal Treatment of Syphilis of Central Nervous System. M. J. Synnott, Montclair, N. J.
91 Clinical Significance of Blood Pressure. P. Nicholson, Ardmore, Pa.
92 Abortion of Typhoid. W. L. Frazier, Mountain Home, Ida.
93 *Prophylaxis of Puerperal Convulsions. S. H. Blodgett, Boston.
94 Two Months' Service in Small Hospital. A. Whitman, New York.
95 Cannula and Needle for Blood Transfusion and Intravenous Infusions. D. J. Kaliski, New York.

93. **Prophylaxis of Puerperal Convulsions.**—The changes made by Blodgett in the diet and treatment of the prospective mother consisted broadly in watching carefully the amount of urea excreted by the kidney, and when this fell below what appeared to be normal for the patient, in at once withdrawing all meat and fish from the diet. The rule was made that cases applying for admittance to the hospital for their confinement should eat meat but once daily, and bring a sample of the twenty-four-hour urine to the hospital every three weeks up to the sixth month of pregnancy. After that time the urine was to be sent in every two weeks. Any patient showing a slight subnormal urea output was ordered to send in the urine each week, and if the decrease still persisted she was notified to come into the hospital, in which the urine could be examined each day and the diet regulated as judged advisable. For 1912 there were 768 confinements with two cases of convulsions and one induced labor. For

1913 there was 890 confinements with two cases of convulsions and no induced labor.

Blodgett has advised against the termination of pregnancy in which the urea output has been normal, or in which by giving a meat-free diet he could secure a normal urea output and has given very little consideration in deciding the question of the relation of possible convulsions to the amount of albumin present in the urine or to the clinical symptoms. So far as medicine is concerned there has been no general rule in regard to the cases. Very few of them have received any medication whatever, and medicine has been given only in cases in which it is necessary to keep the bowels in normal condition. From experience in these cases Blodgett has come to the point in which he has felt it safe to advise the continuation of pregnancy (the case being under constant supervision), even in cases in which the patients have headache, dimness, or blurring of vision, and a large amount of albumin provided the excretion of urea does not go below normal.

Missouri State Medical Association Journal, St. Louis

March, XII, No. 3, pp. 91-144

96 Hodgkin's Disease. Report of Case which Yielded Positive Cultures. G. Ives, St. Louis.
97 Appendicitis in Children. M. B. Clopton, St. Louis.
98 Blood Changes in Tuberculosis. W. W. Duke, Kansas City.
99 Joint Syphilis. A. O'Reilly, St. Louis.
100 Missouri's Mental Defectives. G. W. Robinson, Kansas City.
101 Icteric Diseases of New-Born Infant. J. Zahorsky, St. Louis.
102 Tonsillitis. W. K. Statler, Oak Ridge.

Modern Hospital, St. Louis

March, IV, No. 3, pp. 147-226

103 Winifred Masterson Burke Foundation—Convalescent Group. T. J. Van der Bent, New York.
104 Feeding the Hospital—Classes of People to be Fed. L. Graves, Cleveland.
105 Forty Years of Thalassotherapy. W. H. Bennett, Atlantic City, N. J.
106 Cereal Breakfast Foods—Composition, Digestibility and Relative Value. J. P. Street, New Haven, Conn.
107 New Bethesda Maternity Hospital in Cincinnati. C. Golder and W. Gillespie, Cincinnati.
108 Norwood Civic Association Health Center. E. Ross, Norwood, Mass.
109 Manufacture of Nitrous Oxid for Anesthesia in Hospitals. A. R. Warner, Cleveland.
110 Conduct of Unendowed Small Hospital. N. B. Jordan, Aurora, Ill.

New York Medical Journal

March 20, CI, No. 12, pp. 549-600

111 *Intestinal Stasis, Bands, Kinks and Membranes. R. A. Keilty and A. J. Smith, Philadelphia.
112 Hematogenous Infections of Kidney. G. E. Brewer, New York.
113 Arsenic Poisoning; Case Report from China. A. C. Reed, Changsha, China.
114 Solid Fibroid Tumor of Ovary. J. T. Johnsen, Washington, D. C.
115 Gallstone Tray. A. Schachner, Louisville, Ky.
116 Abdominal Symptoms in Pleurisy and Pneumonia. J. Dorning, New York.
117 Iodin Fumigator. W. L. Capell, Omaha.
118 Nature and Pathogenesis of Epilepsy. L. P. Clark, New York.
119 Treatment of Epilepsy. I. Bram, Philadelphia.

111. Intestinal Stasis, Bands, Kinks and Membranes.—This paper correlates the various phases of this subject and includes the study of 100 autopsies. Keilty and Smith emphasize that every case is a study in itself, and before treatment, especially surgical, is undertaken, a thorough knowledge of the principles of the case must be obtained. It is obvious that simple parietopericolic membranes are harmless and should be left alone. On the other hand, simply to sever inflammatory adhesions, as in the case of the gallbladder to the duodenum (as was done at autopsy), a midline coloptosis would result, and possibly the patient would be worse off than before. Then, too, in dealing with these anomalies, Nature's habit of adaptability must be considered. The intestine may perfectly compensate for a bad kink, and if this was suddenly relieved, loss of support might result in torsion, ileus, or volvulus. The authors urge the adoption of a uniform nomenclature; that Lane's work should be reviewed carefully; that the status of various membranes should be fixed; that the physiology of the gastro-intestinal tract, as it refers to peristalsis, should be clearly understood.

These "bands" are of three types; congenital, developed hypertrophies, and inflammatory. Intestinal toxemia is common, the result of stasis, brought about primarily by the traction of these various bands, producing intestinal hypertrophy, with secondary fatigue or degeneration and dilatation. The condition occurs in the well nourished as well as in the neurasthenic. Intestinal ptosis occurring with general visceroptosis is merely an exaggerated type of the simpler forms. The various possibilities must be clearly understood, and each individual case carefully studied before any treatment is inaugurated. When surgical means are applied, the mechanism must be clear, else the result will be worse than the original condition. Finally, at operation the entire abdomen must be carefully explored, because these conditions rarely affect one region without another.

Northwest Medicine, Seattle

March, VII, No. 3, pp. 69-102

120 Hydronephrosis. Report of Case. G. S. Peterkin, Seattle.
121 Pyelography. W. J. Pennock, Spokane.
122 Value of Decompression Operations in Disorders of Brain. K. A. J. MacKenzie, Portland, Ore.
123 Difficulties in Diagnosing Ectopic Pregnancy. F. R. Fursey, Spokane.
124 Transverse Presentations. N. M. Benyas, Portland, Ore.
125 Repeated Pregnancy in Same Tube. L. Ricen, Portland.
126 Differential Diagnosis of Typhoid, Gastro-Enteritis and Appendicitis. R. W. Fisher, Rigby, Ida.
127 Treatment of Appendicitis. E. C. Rich, Ogden, Utah.
128 Crushing Injuries. W. A. Wright, Pocatello, Ida.
129 Desirability of Early Treatment in Precancerous Lesions. C. Snow, Salt Lake City.

New Jersey Medical Society Journal, Orange

March, XII, No. 3, pp. 105-156

130 Diagnostic Methods in Diseases of Rectum and Sigmoid Colon. F. C. Yeomans, New York.
131 Abnormal Pregnancy. G. A. Rogers, Newark.
132 Bone Tuberculosis. G. H. Sexsmith, Bayonne.
133 Pain in Upper Abdomen Due to Chronic Disorders. H. D. Jump, Philadelphia.
134 Appendicitis as Factor in Other Abdominal Affections. L. J. Hammond, Philadelphia.

Ohio State Medical Journal, Columbus

March, XI, No. 3, pp. 151-210

135 Therapeutics of Sympathetic Ophthalmia. H. Gifford, Omaha.
136 Infantile Uterus. M. A. Tate, Cincinnati.
137 Essential Factors in Establishing and Maintaining High Standard of Public Health. H. C. Brown, Columbus.
138 Home Treatment of Tuberculosis. H. A. Berkes, Cleveland.
139 Premature Infant. H. J. Morgan, Toledo.
140 Chronic Pyelitis: Its Cause, Clinical Course and Treatment. F. C. Herrick, Cleveland.

Southern Medical Journal, Mobile

March, VIII, No. 3, pp. 173-252

141 *Effect of Impounded Water on Incidence of Malaria. H. R. Carter, Baltimore.
142 *Malaria Carriers and Important Rôle They Play in Persistence and Spread of Malaria. C. C. Bass, New Orleans.
143 Losses to Rural Industries Through Mosquitoes that Convey Malaria. D. L. Van Dine, Washington, D. C.
144 Losses to Rural Industries from Malarial Mosquitoes. J. K. Thibault, Jr., Washington, D. C.
145 *Thirty Cases of Malaria, Estivo-Autumnal, Treated with Quinin Intravenously. T. E. Wright, Monroe, La.
146 Report of Malaria Commission of Southern Medical Association. C. C. Bass, New Orleans.
147 *Organism Probably Causing Pellagra. T. E. Sanders, Hot Springs, Ark.

141, 142 and 145. Abstracted in THE JOURNAL, Dec. 12, 1914, p. 2158.

147. Organism Probably Causing Pellagra.—July 14, 1914, Sanders withdrew the spinal fluid from a pellagrin, who had died one hour previously from a violent case of pellagra, exhibiting marked cerebral symptoms. Part of the fluid was examined and the other part was incubated. The part that was examined showed a very few organisms that appeared to be oval in shape, and the periphery stained more intensely than the center with Giemsa stain. The other part of the spinal fluid was incubated for about a week before it showed

any apparent growth. A smear showed the same organism. Transfer was made from the growth in the spinal fluid to agar-bouillon and Loeffler's blood serum. There was no growth on the agar-bouillon, but it grew on the blood serum. Sanders kept the growth alive on blood serum by transplanting for quite a while; then it finally died out.

July 31, 1914, a similar case presented itself and Sanders went through the same routine and obtained the same organism. In both cases the organism finally died out on Loeffler's blood serum after many transplants. Oct. 18, 1914, Sanders held an autopsy on a pellagrin who had died of a violent typhoidal type of pellagra with marked skin lesions of the wet ulcerative type. The abdominal fat was very little, if any, reduced. The spleen was comparatively small to the pellagrin's weight. He split the spleen with a sterile knife and inoculated a special medium, consisting of a saturated corn meal and agar bouillon faintly acid with hydrochloric acid. On culturing he obtained the same organism and it has been growing on that special medium ever since. The organism is highly motile and seems to pass through a definite cycle of some kind. It is characterized by a multiplicity of forms changing from a small oval cell-like form to small bacilli, thread-like bodies and comparatively large bacilli. Every day it appears different, but appears to come back to the same forms. Sanders has been growing it for over four months and the growth appears the same as when it started. A large number of fecal smears Sanders had gathered from pellagrins in the diarrheal stage of the disease contained large quantities of the same organism.

West Virginia Medical Journal, Wheeling

March, IX, No. 9, pp. 291-326

148 Study of Joint-Bodies from within, Present in Articulations Otherwise Apparently Normal. A. P. Heineck, Chicago.
149 Acquired Non-Traumatic Cataract of Young. C. B. Wylie, Morgantown.
150 Syphilis—Salvarsan—Scepticism. W. C. Slusher, Bluefield.
151 Warning Concerning Use of Salvarsan. W. C. Slusher, Bluefield, and E. B. Burchell, New York.
152 Case of Sporotrichosis. R. H. Haynes and S. L. Cherry, Clarksburg.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Children's Diseases, London

March, XII, No. 135, pp. 65-96

1 *Atonic Form of Cerebral Diplegia. Report of Cases. F. E. Batten and W. H. von Wyss.
2 Cardiac Failure in Child, Aged Six Years, Associated with Atheroma of Pulmonary Artery and Extreme Dilatation of Right Ventricle. P. J. Veale and C. Coombs.
3 Hematoma of Lower Lid in Infant, Aged Five Months: Symptom of Infantile Scurvy. S. Stephenson.
4 Pneumococcus Infection and Immunity. R. I. Cole.

1. **Atonic Form of Cerebral Diplegia.**—The four cases cited by Batten and von Wyss have in common a hypotonic condition of the voluntary muscles of the body, especially of the lower limbs, and a deficiency of the synergetic action of the muscles, as shown by the inability to stand or walk, but there was no loss of power in performance of active movements. One case showed a marked degree of ataxia, characterized by a lack of proportion of the movements (dysmetria of Thomas). In two of the cases there was also a certain amount of hypertonia, as evidenced by the adductor spasm and overflow of the abdominal reflexes; in one case there was an occasional extensor response of the plantar reflexes. There also was in two cases rigidity of the lower limbs in a certain position, namely, when the children were suspended by the axillae. Not one of the cases showed the extreme hypotonia described by Foerster with the exaggerated flexibility of the trunk, head and neck. Two of the children were markedly mentally deficient and mute, and their condition resembled closely that described by Pierce Clark. Three of the children were born as breech presentations. One showed another malformation, namely, congenital dislocation of the hips.

British Medical Journal, London

February 27, I, No. 2826, pp. 365-404

5 Treatment of Malignant Disease of Skin. J. H. Sequeira.
6 Report of Work Carried Out at Radium Institute, London, in 1914. A. E. H. Pinch.
7 *Radium Treatment at Royal Infirmary, Edinburgh, During 1914. D. Turner.
8 Tuberculous Soldier at Front. T. Oliver.
9 Treatment of Epidemic Cerebrospinal Meningitis. G. C. Low.

March 6, No. 2827, pp. 405-452

10 *Application of Strong Antiseptics to Infected and Non-Infected Wounds. C. J. Bond.
11 Treatment of Pernicious Aremia by Salvarsan and Neosalvarsan. B. Bramwell.
12 Benzoi Therapy in Leukemia and Lymphosarcoma. T. G. Moorhead.
13 Trench "Frost-Bite." C. G. Watson and C. S. Myers.
14 Extraction of Shrapnel Bullet from Knee-Joint Through Vertical Incision. W. Robinson.
15 Removal of Eyes in Presence of Orbital Cellulitis. W. T. Lister.

7. **Radium Treatment at Edinburgh Royal Infirmary.**—Sixty-three patients attended for radium treatment at this institute during the past year; of these, 36 were in-patients, 27 were out-patients; 34 of the patients suffered from, in all but 1 case, inoperable malignant disease, 23 of these from carcinoma and 11 from sarcoma. There were 12 cases of rodent ulcer, 6 of exophthalmic goiter, 2 of otosclerosis, 1 of middle-ear deafness, 1 of Paget's disease, 1 recurrent wen, 1 simple tumor, 1 nevus, 1 leukoplakia, 1 warty tumor, 1 of hypertrophied tonsils. Though a cure was not effected in any of the malignant cases, nor, says Turner, considering their advanced nature, was it to be expected, yet in practically all of those who were treated more or less benefit was produced by the relief of pain, the cessation of discharges, the healing of ulcerated surfaces, the removal of local growths and the prolongation of life. In some of the cases radium was used as a prophylactic after the surgical removal of a growth, and sufficient time has not yet elapsed to ascertain its effect.

Remarkable results were produced in some of the malignant cases; thus an epitheliomatous growth was entirely removed, first from the posterior wall and then from the anterior wall of the vagina, so that not a trace of it remained; there has, however, been a recurrence which is being treated. In a rapidly growing periosteal sarcoma of the lower end of the femur in a boy of 13 the application of radium caused the growth to shrink and to become dense, hard and fibrous so that whereas, it bled like an aneurysm on the first introduction of radium, two months later, on a second introduction it scarcely bled at all, and it was so hard and dense that it was only with difficulty that the radium could be inserted.

Malignant disease of the buccal cavity, the pharynx, larynx and posterior nares appears to be less amenable to radium, but this Turner suggests may be partly due to the difficulty of administering a sufficient dose in such positions. Of 12 cases of rodent ulcer, 9 were easily cured; the remaining 3 have not yet been long enough under treatment for the effect to be produced. In the 6 cases of exophthalmic goiter radium was of undoubted benefit, in 1 case apparently bringing about a definite cure.

10. **Applications of Strong Antiseptics to Wounds.**—Bond ascertained by actual clinical observation that the free application of strong antiseptics like pure phenol at the time of operation to extensive wounds, free from disease germs, does not materially affect the healing of such wounds. The usual preparatory treatment as used in the aseptic method is first carried out. In one leg the wound left by the long incision on the inner side of the calf, which may measure 6 or 8 inches in length and (after the necessary dissection) 3 or 4 inches in width, was well rubbed over with pure phenol until the tissues assumed the dirty white appearance characteristic of the reagent. In the other leg of the same patient the corresponding incision was treated with tincture of iodin (B. P. strength). In other patients, out of a number of incisions on the same limb, one was treated with pure phenol, one with tincture of iodin, one with mercuric chlorid solution (1 to 1,000), one with phenol lotion (1 to 20), and the other incisions with no antiseptics at all. The edges

of the wounds were coapted in all cases by Michel's metal clips, and all were dressed alike with plain white sterilized gauze, wool and bandage.

The only difference that could be ascertained in the patients' own sensations after recovery from the anesthetic was that incisions treated with phenol smarted rather less than incisions treated with iodin. There was little or no difference, as far as painful sensations were concerned, between wounds treated with and those treated without antiseptics; such slight irregular differences as were present might well be accounted for by entanglement of delicate nerve endings in the ligatures. It was usually impossible to tell from the appearance of the line of the incisions or the condition of the parts round, after the removal of the dressing on the second day, or at a later period which of the wounds had been treated by one method and which by the other. All healed by primary union without undue local reaction or any elevation of temperature in the ordinary way.

Glasgow Medical Journal

March, LXXXIII, No. 3, pp. 161-240

16 Head Injuries. A. J. Wilson.
17 Case of Polyglandular Syndrome with Suprarenal Hypernephroma and Adenoma of Pituitary Gland—Both of Small Size. J. Anderson.
18 Treatment of Impacted Breech Cases. R. Jardine.

Journal of Laryngology, Rhinology and Otology, London

March, XXX, No. 3, pp. 89-144

19 Noise-Deafness: Recent Experimental Work, and Clinical Investigation into Effect of Loud Noise on Labyrinth in Boiler-Makers. T. R. Rodger.
20 Some Considerations Which Determine Extent of an Operation in Septic Invasion of Lateral Sinus. H. E. Jones.
21 Abnormal Styloid Process Causing Tonsil Irritation. M. Yearsley.

Lancet, London

February 27, I, No. 4774, pp. 419-478

22 Treatment of Wounds in War. W. W. Cheyne.
23 *Colloidal Iodin Associated with Serum Treatment in Tetanus. Report of Cases. Auregan.
24 Headache Associated with Intranasal Disorders. L. H. Pegler.

March 6, No. 4775, pp. 479-532

25 Operative Treatment of Cleft Palate. H. Blakeway.
26 Case of Multiple Pulsating Tumors Secondary to Hypernephroma. F. Taylor.
27 Consideration of Some Elementary Principles Involved in Treatment of Soil-Contaminated Wounds. A. G. R. Foulerton.
28 Case of Phenacetin Poisoning; Recovery. P. Hamill and T. G. M. Hine.
29 *Two Cases of Traumatic Hemoperitoneum. C. H. Whiteford.

23. **Colloidal Iodin and Serum Treatment in Tetanus.**—Auregan has combined colloidal iodin treatment, both in the form of dressings and daily intramuscular injections, with serum treatment in tetanus. Tetanus patients who have been thus treated proved to have survived in a proportion of 68.8 per cent., a percentage distinctly higher than the average proportion of recoveries ordinarily obtained. Ten tetanus patients were treated by serotherapy without colloidal iodin treatment; of these, 4 recovered and 6 succumbed, giving a percentage of 40 recoveries. Fourteen patients were treated by serum therapy combined with colloidal iodin treatment; 10 recovered and 4 succumbed, a percentage of 68.8 recoveries.

29. **Traumatic Hemoperitoneum.**—Two cases are cited by Whiteford. In one case the bleeding came from an infected wound of the liver. A man, aged 22, stabbed himself in the left hypochondrium with a bayonet. The wound opened the peritoneal cavity and celiotomy was performed through the left rectus muscle. A handful of blood clot was removed from between the stomach and left lobe of the liver. Swabs passed into the pelvis returned dry. The source of the bleeding, which had ceased, was the left lobe of the liver, which was completely perforated 1½ inches above its lower border. No other viscus was injured. The abdominal incision was closed and the bayonet track in the parietes packed with gauze soaked in tincture of iodin. Forty-eight hours later the lower abdomen became tense and tender and was drained suprapubically by a tube passed into the pelvis, many pints of blood and peritoneal fluid being evacuated. The gauze in the bayonet track was replaced by a tube. Both incisions suppurated freely. Food was taken well and the bowels acted regularly. The abdominal condition steadily improved, but the mania became more acute. Most of the known hypnotics were given in heroic doses but failed to secure sleep, and the patient died exhausted seventeen days after the injury.

The second patient was a married woman, aged 39, who had had one child seven years ago but no other pregnancies, and in whom one and a half years ago menstruation began to last from four to seven weeks, without pain or intermenstrual discharge. The loss was not sufficient to cause marked anemia. An operation was performed per vaginam. The uterus was found to be mobile and 3 inches in length, the cervix being unusually long. The only abnormality was a hard, submucous mass, embedded in the right side of the cervix and extending upward in the uterine wall. This mass, which was not encapsuled, was dissected out, the right side of the cervix being divided and closed by sutures at the end of the operation. The mass removed resembled in size and shape the two phalanges of an adult thumb, and was shown by the microscope to consist of a vascular fibrous tissue with no signs of a capsule. Two hours after operation the patient rapidly became collapsed and almost pulseless. The collapse slowly passed off under stimulation and administration of saline solution per rectum. Fifty-six hours after operation there was definite peritonitis with distended immobile abdomen, dulness in the flanks, repeated vomiting and complete intestinal paralysis, pulse 120 and acute pain. A blood count showed leukocytes 13,000 and red cells 50 per cent. below normal. A drainage tube was inserted into the pelvis from above the pubes, evacuating over a quart of blood and peritoneal fluid. The Fallopian tubes palpated through the suprapubic incision were found free and not enlarged. The suprapubic drainage gave immediate and permanent relief to the pain. During the first two weeks broken-down blood clot drained freely per vaginam. Recovery ensued.

Practitioner, London

March, XCIV, No. 3, pp. 343-486

30 Injection Treatment of Hemorrhoids. F. S. Edwards and Others.
31 Cerebral Paralyses of Uremic Origin. H. B. Shaw.
32 Four Cases of Incipient Pulmonary Tuberculosis in Children. D. B. Lees.
33 Common Errors in Diagnosis. A. Abrahams.
34 Radiology and Electrotherapeutics in War Time. F. Hernaman-Johnson.
35 Recent Work in Radium, Roentgen Ray and Electrotherapeutics. N. S. Finzi.
36 Eclampsia. J. Oliver.
37 Recent Work on Nervous and Mental Diseases. H. C. Thomson.
38 *Primary Splenomegaly or Splenic Anemia. T. J. Hollins.
39 Toxins and Master-Toxins. Study in Tuberculosis. A. W. Robertson.
40 Suicide—From General Practitioner's Point of View. J. B. Adams.

38. **Primary Splenomegaly.**—Experimental inoculation of rabbits with the colon bacillus has led Hollins to conclude that primary splenomegaly is due to an active hemic intoxication, and that the colon bacillus can cause all the features of this disease. Whether the colon bacillus is the sole cause, which is probable, or merely one among many causal microorganisms future research, he says, will have to decide. The hypertrophy and fibrosis of the spleen and the anemia are, he believes, due to an active intoxication by this microorganism. It seems suggestive that, in from 50 to 80 per cent. of all cases of cirrhosis of the liver, splenomegaly is found and proves in his opinion that the liver and spleen are attacked simultaneously by a toxic agent. The anemia is hemolytic and due to a specific hemolysin which, in the case of the bacillus coli, may be termed colilysin. That the bacillus coli has a hemolytic action on blood cells Hollins proved by experimenting with a culture in vitro. The microscopic evidence seems to disprove the idea that the anemia is hemolytic, for no deposits of pigment or broken-down cells have ever been discovered in the enlarged spleen, like those seen in the other hemolytic anemias such as pernicious anemia.

Hollins has seen three cases of the disease during the past five years, and has made a special study of it. In these cases, certain clinical facts arrested attention and led him to the

conclusion that this affection is probably due to poisons absorbed from the gastro-intestinal tract, and that these are most likely due to the colon bacillus. This presumption from clinical data has been substantiated fully by experiment. The clinical facts are: 1. Two of the patients were females, and had a history of constipation. 2. Oral sepsis was present in one case. 3. The enormous numbers of colon bacilli present in the diarrheic motions of one case of Banti's disease, met with in the stage preceding death. 4. In one case, nervous lesions resembling those artificially produced by injection of animals with *B. coli* were present. 5. The evidence of other diseases associated with invasion of *B. coli*, especially coliuria. 6. The presence of *B. coli* in the normal spleen. 7. Cirrhosis of the liver is produced by toxins from the gastro-intestinal tract, and probably by the colon bacillus.

Sei-I-Kwai Medical Journal, Tokyo

February, XXXIV, No. 2, pp. 5-13

41 Cremasteric Reflex. S. Oinuma.

Annales de Gynécologie et d'Obstétrique, Paris

July, XLI, No. 7, pp. 385-432. Last indexed Aug. 8, 1914, p. 514

42 *Reciprocal Relations Between Pregnancy and Mammary Cancer. (Gestation et cancer de la mamelle.) J. L. Faure and A. Pinard.
43 *Operation to Restore Permeability to Fallopian Tube. (Salpingolysis pour sterilité; grossesse consécutive.) Goullioud.
44 Missed Labor with Extra-Uterine Pregnancy. (Rétention abdominale d'un foetus ectopique à terme en ayant imposé pour une retention utérine.) A. Fruhinsholz and G. Michel.

42. **Reciprocal Relations between Pregnancy and Mammary Cancer.**—Pinard has encountered in forty years of practice only two cases of pregnancy occurring in women with cancer of the breast, while pregnancy with cancer of the uterus is not uncommon. He reports in detail one of the two cases; the woman's breast had been the seat of a bunch of small torpid tumors for nearly two years. She became pregnant and the tumors began to grow, the aspect near term resembling a bunch of nipples. The breast was excised and delivery followed within two weeks; mother and child are still living over two years later. In the other case a woman of 28 noticed a small tumor in the left breast at the sixth month of a pregnancy. Immediately after delivery the tumor increased rapidly in size and the woman died in four months from generalized malignant disease. No attempt at an operation had been made in this case. Another young woman speedily succumbed to acute cancer of the breast six months after a childbirth, but Pinard does not know whether the tumor had developed first during or after the pregnancy. These experiences emphasize the necessity for prompt removal of every lump discovered in the breast during or soon after a pregnancy. The operation should be done without the least delay and should be as radical as possible.

43. **Operative Treatment of Sterility.**—Goullioud does not believe it is possible for the permeability of the tubes to be restored spontaneously or under medical measures when the obstruction is bilateral, the work of peritoneal adhesions. This obstruction of the tubes in consequence of some unrecognized abortion or of ascending gonorrhea is the main cause of sterility in women. In order to remedy this, he liberates the tube from the adhesions binding it down, and has found that this salpingolysis alone is enough to remove the obstacles to conception. A typical instance is related; the woman had been married for seven years but there had been no pregnancy after an early miscarriage at the third month. She seemed to be quite healthy except for a dragging sensation in the abdomen after fatigue from any cause. The operation revealed slight chronic inflammation in the right adnexa which were removed, and the tube on the other side was freed from adhesions and its permeability thus reestablished. She was delivered of a healthy child two and a half years after this salpingolysis.

Archives Mens. d'Obst. et de Gynécologie, Paris

November, III, No. 11, pp. 193-240

45 *Suppuration in Fallopian Tube Perforating into the Bladder; Three Cases. (Salpingites suppurées ouvertes dans la vessie.) M. Auvray.

45. **Salpingitis Perforating into the Bladder.**—Auvray has been able to find only very few recorded cases of this kind. Probably in many instances the perforation in the bladder escaped notice in the operation on the suppurating tube. His own three patients were women in the thirties, and the history of the case and cystoscopic findings suggested the diagnosis at once. In one case the bladder wall was intensely congested and covered with blisters; in another the two openings had healed when the bladder was examined post mortem. This last patient succumbed to complications of a suppurative kidney trouble. Nothing in cystoscopy had suggested the existence of the pyelonephritis. Experience shows that the fistulas into the bladder scarcely ever heal spontaneously while the kidneys are constantly exposed to ascending infection. Hysterectomy, and preferably by the abdominal route, is the treatment advocated.

Bulletin de l'Académie de Médecine, Paris

February 16, LXXIII, No. 7, pp. 213-476

46 *Provisions for Infant Welfare During the War. (Protection de l'enfance pendant les cinq premiers mois de guerre dans le camp retranché de Paris.) A. Pinard.
47 Wounds of the Ear, Nose and Throat. (Considérations cliniques sur l'oto-rhino-laryngologie en temps de guerre.) E. Moure.
48 *Germs in the Breath. (Transport et multiplication des germes contagieux par l'air expiré.) A. Trillat.
49 The Trench Foot. (Les gelures aux pieds dans les tranchées.) A. Castex.
50 Vital Staining and Electric Tests in Examining Nerves Wounded in War. (La chirurgie des nerfs sous le controle direct de l'injection colorée, de la biopsie et des réactions électriques: bio-histo-physiologie.) J. A. Sicard and Others.
51 Operations on Nerves; One Hundred Cases. H. Claude.

46. **Provisions for Infant Welfare During the War.**—Pinard relates the organized work for infants undertaken at Paris when families were disrupted by the call of the breadwinner to the colors. An "office centrale d'assistance maternelle et infantile" was organized on the principle that during a war and as long as the army is kept mobilized every woman without adequate means who is pregnant or has a child under 3 years of age, should be assured the social, legal and medical protection to which she has a right in civilized society. Never have pregnant women been so well cared for; 74 per cent. of the 16,579 childbirths during the first five months of the war were in institutions, some improvised to serve as maternities during the war. Never have all the parturients and young children had so much done for their welfare as in Paris at this time. Comparing the figures with those of the previous year, the result is shown in a much lower morbidity and mortality and there were only 45 foundlings to 662 in the same period in the previous year, and all this notwithstanding the anxiety of the mothers with their dear ones in the trenches. All of the women delivered in the institutions were able to nurse their infants at first. Pinard thinks the time will come when notification of every pregnancy reaching the fifth month will be made compulsory. (See also Paris Letter, p. 1010.)

48. **Germs in Breathed-Out Air.**—Trillat's disquieting views in regard to the transmission of infectious disease were summarized in THE JOURNAL, Jan. 2, 1915, p. 88. The microorganisms in expired air may serve as nuclei on which moisture becomes condensed. The moist dust thus formed obeys physical laws different from those governing dry dust. His experiments have shown further that the microbes are capable of proliferating in this moist dust and when it alights on any surface. Cold induces condensation of the moist dust on a surface, and this may be one factor in the disturbances and infections which follow getting chilled. The moist dust floats lower and condenses on a surface more readily on cold, damp days, and where many persons are breathing in a crowded room. The volatile nitrogenous substances in breathed-out air serve as nutrients for micro-organisms and promote their proliferation. Infection of others may thus result from later generations of the micro-organisms expelled in the breath. The gases in vitiated air may also rouse to virulence microorganisms floating dormant in the air as saprophytes. Recent research has demonstrated how slight may be the causes influencing the biologic aptitudes of microbes, how virulence

may be a merely temporary attribute, and how an infectious disease may vary in consequence from the mildest sporadic form to violent explosions of epidemics. (Further details in Paris Letter, p. 1010.)

Presse Médicale, Paris

February 18, XXIII, No. 7, pp. 49-55

52 Treatment of Wounds of the Nerves in War. S. Pozzi.
53 Wounds of the Genital Organs. E. Delorme. (See Paris Letter, p. 1089.)
54 Localization of Metal Foreign Bodies in the Tissues. (Méthode pour localiser exactement les projectiles aprés la radioscopie.) A. Vergely.
55 Iodized Charcoal in Treatment of Infected Wounds. (Charbon iodé dans le traitement des plaies infectées.) L. Lemaire.
56 Reenforced Sheet Lead Splints for Fractures. (Gouttières en plomb pour fractures.) Rigot.

Revue Médicale de la Suisse Romande, Geneva

February, XXXV, No. 2, pp. 57-116

57 Luxation of the Semilunar Bone of the Carpus; Three Cases. H. Vulliet.
58 *Eosinophilia Consecutive to Experimental Resection of the Sciatic Nerve. N. Loewenthal.

58. **Disturbances Following Resection of the Sciatic Nerve.**—Loewenthal has been studying for years the behavior of the sciatic nerve in rabbits after resection. In the course of this research he noted the effect on the skin, lymph glands and blood, and calls attention here in particular to the marked eosinophilia which results in various organs that ordinarily do not contain eosinophils. It is possible thus to influence their production in large numbers, in remote organs, merely by severing this nerve.

Archiv für Verdauungs-Krankheiten, Berlin

February, XXI, No. 1, pp. 1-88

59 Importance of Gravity as a Factor in Swallowing. (Ueber den bewegenden Einfluss der Schwerkraft beim Trinken in aufrechter-und Kopfstellung.) J. Schreiber.
60 *Etiology of Dysenteriform Affections. H. Strauss.
61 Pathology of the Appetite. B. Stiller.
62 *Suppurating Bronchial Glands Perforating into Esophagus. (Ueber Bronchialdrüseneiterung.) G. Kelling.
63 Roentgen Findings with Gastric Cancer. (Das Ventrikelkarzinom in typischen Röntgenbildern.) T. E. H. Thaysen.
64 *Tetany and Gastric Ulcer. (Tetanie und Magengeschwür.) F. Schilling.

60. **Etiology of Dysenteriform Affections.**—Strauss remarks that dysentery was regarded first as a clinical picture, then as an anatomic condition, and, later than this, as a manifestation of a certain bacterial infection. Recent experience has shown, however, that a number of intestinal microparasites are able to induce hemorrhagic disease of the bowel, including paratyphoid and Y bacilli as well as the Flexner and Kruse-Shiga bacilli. Only by examining both the stools and serum is it possible, as a rule, to differentiate the virulent from the harmless types of both acute and chronic dysenteriform affections. In typical chronic colitis gravis, swelling of joints, iridocyclitis and venous thrombosis are not uncommon, testifying to the infectious nature of the process. Tonsillitis or meat poisoning preceded the bowel trouble in some cases. In others, streptococcus or staphylococcus infectious processes accompanied it. In one case of chronic hemorrhagic and ulcerative disease of the lower bowel paratyphoid B bacilli were found—the second instance on record, Strauss remarks, of a chronic paratyphoid affection. He tabulates the findings in seven cases of chronic hemorrhagic colitis in which he applied the agglutination test with both dysentery and paratyphoid bacilli. The trouble had developed in all without any acute onset. The Y bacillus or the typhoid bacillus was agglutinated in one case each and the Shiga-Kruse in two cases, but the findings in the stool did not coincide in any instance. In a still later case serum from a woman of 22, who for over two years had had abdominal pains and bloody stools, agglutinated the Kruse-Shiga bacillus 1 to 200 and the paratyphoid bacillus 1 to 100, but not the typhoid bacilli.

62. **Perforation of Bronchial Glands into Esophagus.**—Kelling describes three cases in which he made the correct diagnosis of suppurating bronchial lymph glands perforating into the esophagus. The patients were young adults, inclined to "scrofula" and exposed to unusual inhalation of dust or soot. There were no symptoms to attract attention until perforation occurred, and then crumbly, blood-stained products of suppuration or pigmented, ill-smelling masses came up in the mouth when the patients reclined, but there was no vomiting. Other differential symptoms are pains between the shoulder blades, coughing without expectoration, rise of temperature and the Roentgen findings. Sometimes there is difficulty in swallowing and salivation. Esophagoscopy is liable to be dangerous. Gastric ulcer must be excluded. He explores the esophagus with a sponge-holder, as he explains in detail; some of the pus sticks to the sponge.

A cancer in the esophagus usually causes more or less trouble from stenosis, while this is exceptional with lymph-gland trouble. Treatment must be by keeping up the strength with nourishing food which yet must be soft, perfectly chewed, and washed down with fluids to reduce to the minimum the irritation of the esophagus walls. Healing required several months in his cases, the patients keeping quiet and lying down much of the time, as deep inspiration tends to stretch the abscess. Vaccine therapy with bacteria cultivated from the lesion might be considered. It might be possible to rinse out the esophagus with hydrogen dioxid or alcohol, after closing the outlet below with an inflatable bag. Girard advises temporary gastrostomy to leave the esophagus completely at rest or permit its thorough rinsing out, draining away the fluids through a tube in the opening into the stomach. Rehn in one case opened the mediastinum and removed tuberculous glands compressing the esophagus and bronchi, and the patient, a young woman, recovered; there had been no perforation in this case. Kelling does not believe this is practicable when perforation has already occurred, but it might be possible to aspirate out the contents of the abscess with suction, as with Bier's suction-pump devices. A long, oval bulb, studded with holes, on the end of a catheter connected at the other end with a rubber bulb might answer the purpose, the patient breathing deep as the suction is applied.

In all the cases the clinical picture suggested gastric ulcer at first, except for pain in the back at the fourth thoracic vertebra; sometimes the spinous processes along here were tender. Fibers of the vagus are liable to be compressed and cause reflex pain and other disturbances, even paralysis of the vocal cords or laryngospasm. The mouthful of food swallowed sticks in the esophagus for a moment and then slides gradually onward; there may be pain at the manubrium.

64. **Gastric Ulcer and Tetany.**—Schilling reports two cases which confirm the fact that tetany may develop merely from excessive concentration of the blood from loss of blood or other fluids with gastric ulcer. Fluids by the rectum were not absorbed fast enough to ward off the tetany. One of the patients died in the attack of tetany; her complaints of intense thirst had not been sufficiently heeded. Subcutaneous or intravenous infusion in time would probably have saved her.

Correspondenz-Blatt für Schweizer Aerzte, Basel

February 20, XLV, No. 8, pp. 225-256

65 *Theory and Practical Importance of the Wassermann Reaction. W. v. Gonzenbach. Commenced in No. 6.

65. **The Wassermann Reaction.**—Gonzenbach writes from the Hygienic Institute at Zurich that material sent in from all over that part of Switzerland has sustained the general view that, while a positive Wassermann is not specific, yet it is so characteristic that a positive reaction in the absolute absence of syphilis is so exceptional that the possibility need not be regarded in practice. He warns, however, that a positive reaction indicates merely syphilis in the system; a dubious manifest lesion may be of other nature. Bruck has reported two cases of leukoplakia of the tongue with a tumor on the tongue and positive Wassermann. The microscope showed that the tumor was a cancer in one case, and tubercle bacilli were cultivated from the tumor in the other case.

Gonzenbach tabulates the findings with the test in the various stages of syphilis in 3,755 cases. In 57 cases of aortic insufficiency the reaction was positive in 37; in 15 of 31 cases of aneurysm of the aorta, but only in 9 of 52 cases of other heart affections and in 2 of 27 cases of arteriosclerosis. In disease of the central nervous system, the reaction was constantly negative in all the 26 multiple sclerosis and 13 polyneuritis cases. In 16 cases of pernicious anemia the reaction was positive in 4, and in one of them a complete cure was realized under specific treatment. The findings in 911 eye cases showed the prominent rôle played by syphilis in atrophy of the optic nerve (29 per cent.) oculomotor paralysis (51.9 per cent.) and keratitis (55.7 per cent.). Of the total material sent to the institute for investigation, a negative Wassermann was obtained in 61.4 per cent. of the 10,193 cases. A change from positive to negative under treatment occurs more readily with recent than old infection; refractory cases are not uncommon when the interval is over three years.

Deutsches Archiv für klinische Medizin, Leipzig

CXVII, No. 2, pp. 79-127. Last indexed February 20, p. 702

66 Laws Regulating the Concentration of the Serum as Studied with the Refractometer. (Zur Frage der Restitution der Serumkonzentration.) J. Löwy.
67 Importance of Measurement of Pulse Energy in Study of the Cardiovascular Apparatus: Sphygmobolometry. (Untersuchungen mit dem neuen Sphygmobolometer nach Sahli.) C. Hartmann.
68 Research on the Dynamics of the Pulse; the Energometer and the Volumbolometer. (Die Füllung des Pulses und das Pulsvolumen.) T. Christen and H. Sahli.
69 Pathology of the Blood with Chronic Lead Poisoning. (Zur Pathologie des Blutes bei der chronischen Bleivergiftung.) Schnitter.

Deutsche medizinische Wochenschrift, Berlin

February 18, XLI, No. 8, pp. 213-240

70 *The Water Supply in Villages Entered by the Troops. (Schnelluntersuchungen und provisorische Verbesserungen von Brunnen im Kriege.) K. Kisskalt.
71 Grazing Wounds of the Skull. (Streifschüsse an der Schädelkapsel.) Noehte.
72 Transportable Extension Splint. H. Töpfer.
73 Substitutes for Iodin in Sterilizing the Skin. (Zur Desinfektion des Operationsfeldes mit Jodtinktur oder anderen Arzneimitteln.) J. Schumacher.
74 Aviator Darts. (Fliegerpfeil-Verletzungen im Kriege.) H. Rimann.
75 *Disease of the Liver Accompanying Heart Disease. (Kardiopathische Hepatitis.) P. Heinrichsdorff.
76 Secondary Rays in Deep Roentgen Treatment as Substitute for Radio-Active Substances. H. F. Salzmann.
77 *Probably Non-Tuberculous and Non-Rachitic Hip-Joint Trouble in Boys. (5 Fälle der Calvé-Perthesschen Krankheit.) K. Michelsen.
78 Metallic Mercury, etc., to Ward Off Lice. (Zur Bekämpfung der Läuseplage.) A. Blaschko.

70. **Provisional Measures for Improving the Water Supply.**—Kisskalt refers to the water supply in places entered by the troops, and gives summary directions in regard to examination of wells, improving those capable of improving, closing those that are hopelessly contaminated, and digging new ones. Recent research has demonstrated that ammonia and large amounts of organic substances may be found in wells that are above reproach, while frequently the water is chemically pure in an uncovered well. He says that a well must be regarded as incapable of improvement if there is danger of contamination and the sides are of wood, peat or uncut stones. By letting down a lantern into the wells it is easy to see where dirt-bringing water seeps through a brick or cement wall. The cover should be made water-tight with roofing paper or sheet iron. A few pounds of chlorinated lime shaken into the water will stop the use of a hopelessly contaminated well, or it can be rendered unfit for human use, without harm to cattle, by coloring the water with fluorescein.

75. **Cardiopathic Hepatitis.**—Heinrichsdorff insists that with disease of the heart the liver suffers also not only from interference with its circulation but also from the toxic action of the cause primarily responsible for the heart disease itself. This toxic action is felt not only by the heart but by the liver also. It entails in the latter central degeneration of the acini and inflammation of Glisson's capsule. These changes in the liver coordinated with the changes in the heart can be called cardiopathic hepatitis, to distinguish the condition from that with mechanically produced congested liver. He describes the various changes induced, the chronic form finally running into fibrosis. The congestion and the toxemia may affect the liver when the heart is injured only secondarily. Hence the same pathologic findings in the liver may be encountered with pulmonary tuberculosis and vascular and kidney affections. Even when there is no impeding of the circulation in the liver, the discovery of heart disease throws light on the causes of a liver affection. This non-cyanotic heart-liver trouble is the clearest evidence we have testifying to the toxic origin of the affection.

77. **Juvenile Deforming Osteochondritis.**—Michelsen's article has appeared elsewhere and was summarized in these columns Oct. 24, 1914, p. 1514. The diagnosis is based on the extensive changes in the bone, shown in the Roentgen picture, and the negative tuberculin skin reaction. Treatment should be with massage to prevent atrophy of the muscles, with rest for the joint at other times. It is better to have the child use crutches, with a thicker sole on the sound foot, to keep from use of the limb affected as long as the trouble seems to be progressive. In twenty known cases, seventeen were in boys. The age is usually between 5 and 10. The trouble is not of an inflammatory nature but resembles more the disturbance in the scaphoid bone and patella to which Köhler called attention; all are probably of nutritional or vascular rather than traumatic origin.

Deutsche Zeitschrift für Chirurgie, Leipzig

January, CXXXII, Nos. 5-6, pp. 381-604

79 *Local versus General Anesthesia in Surgery. (In welchem Masse kann die Lokal- und Leitungsanästhesie die Allgemeinnarkose in der Chirurgie ersetzen?) E. Holzwarth.
80 Wound from Navy Signal Pistol. (Ueber Signalpistolenschüsse ohne Hautperforation; einfacher Lochbruch des Schädels.) M. zur Verth and K. Scheele.
81 *Splenomegaly with Anemia. G. Zaccarini.
82 *Primary Acute and Subacute Purulent Osteomyelitis of the Vertebrae. J. Volkmann.
83 *Surgery of the Stomach and Its After-Effects. (Magenchirurgische Probleme, insbes. die Wirkung der Gastroenterostomie.) H. Brun.
84 Experiences with Nail Extension. (Nagelextension.) A. Grabowski.
85 Wounds of the Nerves in War and Use of Calf's Artery as Protecting Sheath. G. Hirschel.
86 Surgical Experiences at the Western Seat of War. Simon.
87 Anatomic Results of Operative Treatment of Habitual Dislocation of the Shoulder. R. Selig.
88 *High Urobilinogen Content in Urine in Appendicitis a Sign of Destructive Lesions. E. Eisner.

79. **Local Versus General Anesthesia.**—Holzwarth reports that of the last 1,438 major operations at Budapest, in only 71 was the anesthetic given by inhalation; the others were done under direct local anesthesia or by blocking the nerve. This includes the entire material in Dollinger's service; Braun's technic was usually followed. A curtain on a small frame shuts off the patient's view of all but the "moral anesthetist" whose task it is to divert the patient's attention. The general condition after the operation is so far superior to that after general inhalation anesthesia, that this alone, he reiterates, would turn the scale in favor of the local anesthesia or nerve blocking. Their technic is so harmless and they have so many points of advantage over the inhalation method that he urges more general use of them and extension of their sphere.

81. **Splenomegaly.**—Zaccarini's long article is a detailed study of the histology and clinical manifestations of enlarged spleen and the results of its removal. The patient in the case described was a woman of 40 whose spleen had been enlarging for five years while severe anemia kept pace with it, a typical case of Banti's disease. The woman died with suddenly developing fever the sixteenth day after the spleen had been removed. It weighed 1,800 gm. The disturbances in the circulation were evidently secondary to the primary changes in the spleen.

82. **Osteomyelitis of the Spine.**—Volkmann summarizes all the cases of osteomyelitis of the vertebral column which he has been able to find on record, classifying them according to the vertebrae involved—a total of 90 cases including 4

from his own experience. In 68.8 per cent. of the cases the onset was stormy. In a few cases the affection ran such a fulminating course that necropsy alone revealed what was the trouble, and only in about a third of all the cases was the osteomyelitis differentiated during life. A history of furuncle, abscess, eczema or felon should suggest the possibility of osteomyelitis, or a trauma affecting the spine. If the patient has complained of vague pains, perhaps radiating into the limbs, and gradually becoming localized in the spine, this should suggest spinal trouble, and by palpating and tapping on the vertebrae it may be located. If an exploratory puncture reveals pus, an operation should follow at once.

In 18 cases the osteomyelitis was mistaken for typhoid, for tuberculous spinal trouble, rheumatism, meningitis or pneumonia, influenza, general sepsis, glandular fever, torticollis, acute myelitis, Landry's paralysis, subphrenic, paranephritic or lumbar abscess, kidney colic, peritonitis or appendicitis. The symptoms may deceptively simulate meningitis except that there is seldom enlargement of the spleen or herpes. With rheumatism, there is never any tendency to a hump or gravity abscess, and the pains seldom cling to one spot. The total mortality was 41.8 per cent.; this is a great improvement over the record a decade ago. But when the spinal cord was involved, the mortality averaged 60 per cent. Incision and curetting of the focus should be supplemented by horizontal extension to prevent deformity of the spine. The after-care is particularly important when the cervical vertebrae are involved. A psoas abscess requires an ample incision.

83. **Gastric Ulcer.**—Brun argues that the primary factor is spasm of the pylorus. This causes the pain, the retention of stomach content and the resulting hypersecretion. When a gastro-enterostomy puts an end to the causes which have been inducing the pylorospasm, then the pains stop at once although the ulcer has not yet had a chance to heal, so the ulcer is not responsible for the pains. This suggests that possibly an operation on the pylorus or on the vagus innervating it might remove the cause for the ulcer. He declares that surgeons should analyze the functional disturbances more, instead of studying merely the pathologic-anatomic findings. Among the suggestions he makes along this line is that it might be possible to connect with a segment of duodenum the esophagus and the stomach, thus bridging over a cancer at the cardia, a palliative makeshift like a gastro-enterostomy.

88. **Diagnosis of Destructive Appendicitis.**—In cases of appendicitis Eisner examines the urine for urobilinogen, and he has always found it in abnormally large amounts when there was a destructive lesion in the appendix.

Monatsschrift für Geburtshülfe und Gynäkologie, Berlin

February, XLI, No. 2, pp. 109-188

89 *Diagnosis of One or More Placentas at Birth of Twins. (Diagnose ein- oder zweieiiger Zwillinge ante und intra partum.) F. Ahlfeld.

90 *The Sugar Content of the Blood in Eclampsia. (Blutzucker und Eklampsie.) J. Widen.

91 Efficacy of Diathermy in Treatment of Inflammation in the Ovaries or Tubes. S. Recasens.

92 Large Papillary Adenocystoma of the Labii majoris of Fetal Origin. H. Ehrlich.

93 *Radium Treatment of Cancer of the Uterus. (Gebärmutterkrebs.) L. Adler.

89. **Twin Births.**—Ahlfeld states that if there is but one placenta, the second twin still in the uterus is liable to be bled to death if the cord of the first twin born is not ligated on the side toward the placenta. But as this is, or should be, the routine procedure, it is really of no practical importance to determine whether the twins are derived from one ovum or more. Nevertheless he reviews the signs and symptoms which point to one or the other. The blood spurts or pulsates rhythmically in the severed cord only if there is a single placenta, and not always then. If the sex of the twins is different, this speaks for two ova, as also when the membranes around the second twin consist of both chorion and amnion.

90. **Sugar in the Blood and Eclampsia.**—Widen used Bang's micromethod for determining the sugar content of the blood. As this requires only a drop of blood, he repeated his examinations before, during and after the convulsions, at various stages of the disease, and reports here the findings in eight cases. In every case, the women had abnormal amounts of sugar in the blood at times but not constantly. In the one case with fatal outcome, only very slight hyperglycemia was found and only once. In the others it fluctuated; the average ranged from 0.16 to 0.27 per cent. and the duration from one to seven days. The patients had from two to forty convulsions in all.

The severer the case, the lower the vitality and blood pressure, the less the tendency to hyperglycemia. It thus may aid in the prognosis. In one of his cases the hyperglycemia first became manifest when the woman was in profound coma. Its appearance justified a favorable prognosis, confirmed by the outcome. It seems to parallel the intoxication up to a certain point; when the intoxication passes this, then the system is unable to respond with hyperglycemia. The sugar content of the blood did not seem to be influenced by evacuation of the uterus. No connection was apparent between the hyperglycemia and albuminuria. In five cases of simple albuminuria without eclampsia, the sugar content was normal or only slightly and transiently above, but in one case of uncontrollable vomiting at the third month of pregnancy the sugar content was quite high. The sugar content in the blood from the umbilical vein was never above normal in the eclampsia cases, even when it was abnormally high in the maternal blood.

93. **Radium Treatment of Uterine Cancer.**—Adler operates in all operable cases but when this was not possible he has found radium treatment of great benefit. The technic is strictly individualized, the dosage moderate. In the last few months he has made a practice of prophylactic exposures after operating. He begins it about the tenth day, continues at four weeks' intervals, using at most 50 mg. at a ten hour sitting. He makes a point of testing the susceptibility of the patient, placing on the skin capsules with varying amounts of radium and with various filters, thus determining the individual erythema dose. As much of the inoperable growth as possible is removed, and then after an interval of two or three days, five exposures are made, each for twelve hours, the intervals between the exposures ranging from twelve hours to several days according to the local and general reaction. A second and a third series are then given after suspending for three or four weeks. The amount of radium used varied from 29 to 50 mg.

Thirty-four patients have been given radium treatment on these principles, and of the 18 who have completed the course, one has died since from abscesses in the lungs; 3 were not benefited or merely improved, but the 14 others are clinically cured. This includes 9 cases of cancer of the cervix; 2 of the body of the uterus; 2 of the rectum and 1 of the vagina. All were inoperable except in one case in which the patient had refused an operation; it was contra-indicated by severe diabetes or obesity plus age in the others.

Wiener klinische Wochenschrift, Vienna

February 18, XXVIII, No. 7, pp. 169-196

94 Improved Technic for Precision Stereoscopic Roentgenograms. (Neues Verfahren zur Raummessung an stereoskopischen Aufnahmen, insbes. an Röntgenaufnahmen.) W. Trendelenburg.

95 *Inoculation Against Cholera. (Choleraschutzimpfung.) O. Buiwid and L. Arzt.

96 General Principles for Treatment of Tetanus. (Behandlung des Wundstarrkrampfes.) H. Hinterstoisser.

97 *Extension for Fracture of the Legs in War. (Einige technische Behelfe zur Behandlung von Schussfrakturen der unteren Extremität.) G. Engelmann.

95. **Inoculation Against Cholera.**—Buiwid tabulates the details of forty-seven cases of cholera which developed among men who had previously been inoculated against this disease. Also of sixteen other cases in which men had been inoculated while already under the influence of cholera. The data confirm the far-reaching influence of the inoculation in preventing cholera and in attenuating it if it develops later. When the inoculation was done during the incubation of

cholera, its course was not aggravated thereby but rather the reverse; none died in this group. The 6.3 per cent. who died had been given only one of the three injections regarded as necessary for complete inoculation.

97. **Simplified Splints.**—Engelmann comments on the enormous numbers of splints required for the wounded, and the necessity for their being extra strong, simple and interchangeable. Plaster casts are too much trouble to make. To meet these requirements he has devised an extension splint which is proving extremely satisfactory. It is described with twelve illustrations showing the application of the principle for patients able to be up and for those in bed. For the former, the splint consists of two strips of metal connected with a ring at the top which fits over the thigh as high as it can be pushed up against the crotch. It is fastened at the lower end with a spike on each side which is driven into the shoe between the sole and the upper, close to the heel. A slide and thumb screw on each strip adjust it to the proper length. The trouser leg is slit and cut across above and below the lesion so it can be turned back and buttoned across the back to a row of buttons mounted on the outer strip of metal forming the splint.

Zeitschrift für Geburtshülfe und Gynäkologie, Stuttgart

LXXVI, No. 3, pp. 677-908. Last indexed January 23, p. 376

98 *Etiology of Chorea in Pregnant Women. H. Albrecht.
99 Jaundice of the Newly Born an Infectious Disease. (Der Kernicterus der Neugeborenen eine Infectionskrankheit.) B. Pfaltzer.
100 Intolerance of Fibromyomatous Uterus with Twin Pregnancies. F. Montuoro.
101 *Treatment of Placenta Praevia. C. H. Stratz.
102 Pathologic Functioning of Mammary Glands. (Zur Pathologie der Brustdrüsensekretion.) P. Lindig.
103 Indications and Contra-Indications for Use of Hypophysis Preparations in Obstetric Cases. E. Vogt.
104 Mechanism of Pathologic (Straight) Engaging of Fetal Head. (Etiologie des hohen Gradstandes, dargestellt an 6 eigenen im Laufe von einem Jahr beobachteten Fällen.) H. Martius.
105 Etiology of Jaundice of the Newly Born. T. Heynemann.
106 Changes in the Parietal Decidua with Exochorial Pregnancy. (Endometritis uteri gravidi praecipue traumatica.) H. Hinselmann.
107 *Diagnostic Significance of the Antitryptic Power of the Serum. (Antitrypsitischer Titer des Blutserums.) T. Chotzen.
108 Absorbing Capacity of the Puerperal Genital Organs. F. Ahlfeld.

98. **Chorea Gravidarum.**—Albrecht reports a case of recurring chorea during each pregnancy, promptly cured by serotherapy. The recurrence sustains his assumption that the chorea is a manifestation of toxic injury for which the pregnancy is responsible. This assumption is further corroborated by the prompt cure under serum treatment as for a pregnancy toxicosis. The chorea returned at the young woman's second pregnancy, and treatment with sedatives for twenty-two days gave no relief; then 20 c.c. of serum from a normal pregnant woman was injected and within twenty-four hours the severe chorea that had tormented her for over three months, subsided permanently. He suggests that a similar toxic action during the prepuberty stage may be the explanation of chorea in the young—the approach of puberty is causing more or less of a revolution in the internal secretion system, like the changes inaugurated by gestation.

101. **Placenta Praevia.**—Stratz has had 173 cases of placenta praevia in his care and has lost but one of the patients, and this was one of his very first cases. Of the children, 77 were born dead and 20 had long been dead, a mortality of 45 per cent. The statistics for the entire Netherlands in 1914 were 881 cases with mortality of 7 per cent. among the mothers and 43 per cent. of the children. In 236 cases in which the Braxton Hicks method was systematically applied, 2.7 per cent. of the women succumbed and 68 per cent. of the children. Analysis of this material confirms the value, with slight hemorrhage, of absolute quiet and narcotics for the mothers; no tamponing under any circumstances. If there is considerable hemorrhage, version according to Braxton Hicks; under constant oversight, without pulling hard on the foot; allowing spontaneous expulsion up to the shoulders. Delay extraction as long as possible and do it with extreme caution.

The inflatable bag is not required when the case is managed in this way. Cesarean section should not be considered unless the woman is very anxious for a living child or other complications compel it. It is hard to sacrifice the child to the mother's safety, to listen to the heart sounds dying out before the moment has come when the rest of the child can be safely delivered. But to hesitate and think of the child is to juggle with the life of the mother. He adds that it takes more moral courage to deliberately sacrifice the child in this way than to yield to the impulse to venture the utmost to save both mother and child. In conclusion he reiterates his warning against tamponing at the beginning of the childbirth, and against haste in extracting the child. The indispensable condition for correct and successful treatment of placenta praevia is the rock-firm conviction that the Braxton-Hicks procedure is all that is necessary, and that it will certainly save the mother's life.

107. **Diagnostic Significance of the Antitrypsin Titer of the Serum.**—Chotzen tabulates the findings in 134 different persons, including 57 pregnant women and 40 with cancer. They show that the antitrypsin titer is regularly increased in pregnancy and with cancer, so that negative findings tend to exclude both.

Zeitschrift für Urologie, Berlin

January, IX, No. 1, pp. 1-40

109 Special Electrode for Diathermy in Treatment of Gonorrhea. R. Boerner and C. Santos.

February, No. 2, pp. 41-80

110 The Organic Framework of Bladder Stones. (Das organische Gerust der Harnsteine.) E. Pfister.

Zentralblatt für Chirurgie, Leipzig

February 20, XLII, No. 8, pp. 113-128

111 *Experiments with Therapeutic Chilling of Tissues and Organs. (Abkühlung von Geweben und Organen.) O. Lanz.
112 Advantages of Extension in Treatment of Wounds of the Pelvis. (Extensionsverband bei Verletzungen der Beckengegend.) W. Levy.

111. **Action of Transient Cold on the Tissues.**—Lanz has always been impressed with the way in which the skin bears freezing with ethyl chlorid without resulting injury, while the action of a corresponding amount of heat causes a severe burn. Even inflamed tissues and tumors do not make the skin over them more sensitive to the ethyl-chlorid freezing. He noticed, however, in his experiments in this line that anemic persons and those with thyroid insufficiency seemed to react with more disturbance to the freezing. On the basis of this he gave thyroid treatment to patients with chilblains, and it was a success. Cross-fire application of the ethyl chlorid did not seem to modify various organs when applied to animals, even in an intensive form. The freezing also proved impotent to arrest bleeding; the blood stopped flowing when a frozen cake of blood obstructed it, but it flowed again when the cake thawed. It is possible, he adds, that by freezing in this way we might be able to arrest temporarily the functioning of an organ without injury. This would be a useful aid in study of the glands with an internal secretion. Diathermy might perhaps answer the same purpose, with better control.

Zentralblatt für Gynäkologie, Leipzig

February 20, XXXIX, No. 8, pp. 113-128

113 Treatment of Pregnancy Kidney and Eclampsia. M. Steiger.

Policlinico, Rome

February 14, XXII, No. 7, pp. 221-252

114 *Artificial Pneumothorax. G. Breccia. Commenced in No. 6.

January, Surgical Section, No. 1, pp. 1-32

115 Tissue Flaps to Arrest Hemorrhage in Parenchymatous Organs. (L'emostasi negli organi parenchimatosi dell'addome a mezzo di trapianti liberi di tessuti.) A. Pignatti.
116 *Spontaneous Perirenal Hematoma. A. Bevacqua. Commenced in No. 12, XXI.

February, Medical Section, No. 2, pp. 49-96

117 *Efficacy of Vaccine Therapy of Typhoid. V. Pensuti.
118 *Fatal Diplococcus Sepsis in Child. (Sindrome emorragica acutissima e setticoemia diplococcica.) O. Moreschi.

114. **Artificial Pneumothorax.**—Breccia concludes this long study of the mode of action of a therapeutic pneumothorax by emphasizing the modifications it induces in the functioning, the circulation, the dynamics and the trophic conditions in the region. The conditions in these respects are abnormal, to start with, in a lung containing a disease process, and the latter maintains and aggravates a vicious circle. All this is arrested by the collapse of the lung under the artificial pneumothorax, while the other lung is stimulated to extra work, and by its increased functioning becomes less susceptible to disease.

116. **Perirenal Hematoma.**—Bevacqua describes a case in which the pathogenesis of the perirenal hematoma was manifest. The patient was a man who had succumbed to pneumonia. There were signs of old syphilis and the large perirenal tumor proved to be an old hematoma encircling and crowding out the kidney. A small miliary aneurysm and a ruptured artery were found in the region and the inner surface of the adipose capsule had also evidently contributed to the hematoma. He published the case ten years ago, but brings it up again to compare it with twenty-three other cases that have been published since. He tabulates the details of them all, classifying the intracapsular and the extracapsular cases, diffuse or cystic.

117. **Vaccine Therapy of Typhoid.**—Pensuti is convinced that antityphoid inoculation has a future as an effectual method of treating typhoid. He declares that his experience with sixty-nine cases certainly justifies this assumption as he describes in detail. Eighteen of his patients were children.

118. **Diplococcus Sepsis.**—Moreschi relates the clinical course and necropsy findings in a case of what he calls an extremely acute hemorrhagic syndrome and diplococcus sepsis in a boy of 5, fatal the tenth day. The history of the case showed a constitutional tendency to ecchymosis at the slightest excuse, and this hemorrhagic predisposition produced a unique syndrome when the toxic-infectious diplococcus septicemia became superposed on it. A colored plate shows the blood findings and the findings in the bone marrow and lungs.

Brazil-Medico, Rio de Janeiro

January 22, XXIX, No. 4, pp. 25-32

119 Convulsions Following Administration of Camphor Bromid. W. de Almeida.
120 Lipoids and Blood Production. (Hematose e lipoides.) P. Heger and D. Baruch.

February 1, No. 5, pp. 33-40

121 Discovery of Selenomonas in Cecum of a Rodent. A. M. da Cunha.
122 Solitary Bone Cyst. (Caso de kysto osseo.) C. Werneck and R. D. Estrada.

February 8, No. 6, pp. 41-48

123 Mesothorium in Treatment of Uterine Cancer. F. Magalhães.

Mitteilungen a. d. med. Fakultät der k. Univ. Tokyo

XIII, No. 2, pp. 197-409. German Edition. Last indexed p. 1039

124 Case of Myeloid Chloroma. K. Sakaguchi.
125 *Heart Block. (Zur Kenntnis der Dissoziation des Herzens.) S. Sakai.
126 *Pathologic Anatomy of Paratyphoid B. Infection. H. Sawasaki.
127 Epithelium of the External Sulcus Spiralis. T. Wada.
128 Changes in Blood of Rabbits After Injection of Typhoid Bacilli. I. S. Tachigara and Y. Miura.
129 Local Changes After Subcutaneous and Intravenous Injection of Salvarsan. K. Motoki.
130 Mouse Tumors. (Erfahrungen mit Mäusetumoren.) T. Aoyama.
131 Improved Test for Sugar in Small Amounts of Blood. N. Kamimura. (See THE JOURNAL, July 25, 1914, p. 355.)
132 Ocular Symptoms and Flaccid Paralysis with Cerebellar Tumor. (Fall von doppelseitiger Blickparese supranucleären Ursprungs mit ausgedehnter Muskelhypotonie bei einer Kleinhirnerkrankung.) T. Mitamura.

125. **Heart Block.**—Sakai compares the electrocardiograms and necropsy findings in two cases of heart block with what has been written on the subject, describing some special features of one of his cases. Two colored plates accompany the article.

126. **Paratyphoid Infection.**—Sawasaki summarizes nineteen cases of paratyphoid infection from the literature, including several he has previously published himself. It seems to be a septicemia, and the principal pathologic-anatomic findings are the tumefied spleen, the enlarged mesenteric glands, parenchymatous degeneration of various organs, and swelling and ulceration of the lymphatic tissue in the small and large intestines. Abscesses are sometimes found in internal organs. The aspect and structure of the ulcerations resemble those of typhoid, but the arrangement is more that of dysentery. Bacteriologic examination is the only certain means of differentiation.

Hygiea, Stockholm

LXXVII, No. 2, pp. 49-95

133 *Diabetes Insipidus of Hypophysial Origin. (Fall av diabetes insipidus av sannolikt hypofysärt ursprung.) G. Krikortz.

133. **Diabetes Insipidus Following Meningitis.**—Krikortz relates that a previously healthy little girl of 6 developed polyuria with general depression. After a few weeks of this, headache, stiff neck and almost total blindness came on, with other signs of cerebrospinal meningitis. The meningitis evidently was most predominant in or restricted to the region of the hypophysis, so that the symptoms of diabetes insipidus had been for a long time the only signs of trouble. The inflamed tissues had probably compressed the pedicle of the hypophysis and thus shut off its secretion from the blood, bringing on the diabetes insipidus. Syphilis can be excluded in this case; the meningitis was probably of tuberculous origin although no bacilli could be discovered in the fluid drawn by lumbar puncture. The symptoms of meningitis gradually subsided; vision improved by the fifth month and the girl began to walk again. The gait is still slightly spastic and there is some conjugated deviation of the eyes but nothing pathologic in the fundus of the eye.

Nordisches medizinisches Archiv, Stockholm

XLVII, Surgical Section No. 1, last indexed Nov. 28, 1914, p. 1990

134 Arthrodesis of the Shoulder for Deltoid Paralysis; Nine Cases; Results Excellent. G. Asplund.
135 Important Operative Indications Learned from Laparoscopy. H. C. Jacobaeus.
136 Successful Operation for Large Intrathoracic Goiter. E. Key.
137 Malformations of Female Genital Organs. (Einige Fälle von Missbildung der weiblichen Geschlechtsorgane.) J. Kaarsberg.
138 Pathology of the Biliary Passages from the Clinical Standpoint. (Einige Fragen der Gallenwegepathologie in klinischer Beleuchtung.) J. Berg.

Ugeskrift for Laeger, Copenhagen

February 11, LXXVII, No. 6, pp. 209-240

139 *Sugar in the Blood in Diabetics. (Blodsukkerbestemmelser—Ivar Bang's Mikrometode—hos Diabetikere og deres kliniske Betydning.) M. Lauritzen.

139. **The Sugar in the Blood in Diabetics.**—Bang's method of determining the sugar content of the blood is proving remarkably simple and reliable while only 0.1 c.c. of blood is required for it. Lauritzen has applied this test repeatedly to 100 diabetics, and here tabulates the findings before and after dietetic measures, classifying the cases with and without hyperglycemia, acetonuria, acidosis, kidney disease or exophthalmic goiter. This experience demonstrates the convenience of this test in detecting an abnormal sugar content in the blood with diabetes. It thus throws light on the prognosis in cases in which the acetonuria or diaceturia does not reveal the grave prognosis. Equally important is the information to be derived from the test in respect to the effect of treatment; repeated examination of the blood for sugar thus enables supervision of the course of the case.

Instead of relying on the sugar content of the urine as the guide to treatment, we now, with this simple test, can select the diet with which there is no hyperglycemia after meals. This is the criterion, and it is important, as we can thus ward off complications such as neuralgia, gangrene, skin affections and tuberculosis. In mild and moderate cases without complications it enables us thus to steer clear of hyperglycemia, because hyperglycemia destroys the tolerance in diabetes. (The technic for Bang's "micromethod" was described in THE JOURNAL, Nov. 22, 1913, p. 1942.)